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Core Baking in Electrically Heated Ovens

Results of Comparative Tests of Electric and Fuel Heated Core Ovens—
New Westinghouse Thermostat Control

—BY J. L. JONES*

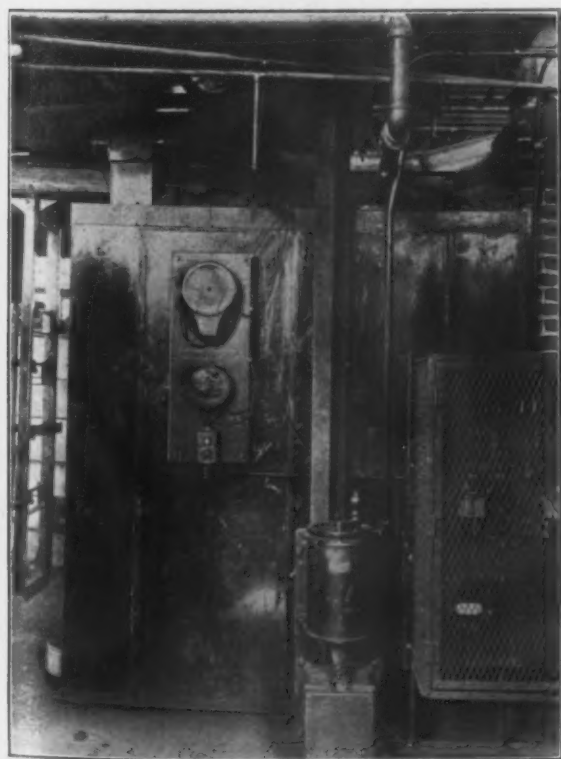
THE core department of most foundries has received too little attention in the past. This is especially true of the ovens used for baking the cores. The average oven that is fired by gas, oil, coal or coke has neither insulation nor temperature control. Hence, it is wasteful of fuel and considerable losses are incurred from overbaked or underbaked cores and from inability to speed up production without endangering the quality of the product.

The purpose of this article is not to discuss in detail either the various methods of electrically heated core ovens or of automatically controlling them, but to give a brief description of a new thermostat that is reliable and comparatively inexpensive. The control element consists of a porous

refractory strip impregnated with a material that is non-conducting up to a given temperature and conducting above that temperature. The porous strip is supported by silver terminals and connected with a suitable relay, motor-driven switch and small transformer, the last-named three pieces of apparatus being assembled in one self-contained unit. The impregnating material will not only regulate at the temperature required for core oven work but is capable of controlling any temperature from 150 deg. Fahr. to 1450 deg. Fahr., with possibilities above and below these points.

The following tests were made to determine what would be satisfactory baking conditions for the electric core oven and to ascertain some of the advantages of this oven over fuel heated ovens. It was not intended to deal specifically with any particular type of oven, but to investigate some of the

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Electrically Heated Core Oven Equipped with New Westinghouse Thermostat. Used in Making Tests to Determine Satisfactory Baking Conditions. The control element is connected with a relay, motor-driven switch and small transformer, the last three named being assembled in one self-contained unit. The oven is of a draw shelf, commercial type

advantages of electric heat in an oven where ventilation is carefully regulated, the temperature accurately controlled and the heaters so placed as to give a uniform temperature in all parts of the oven.

The oven used was of a draw shelf, commercial type. It was 5 ft. 8 in. wide, 6 ft. 8 in. deep and 7 ft. 6 in. high, of sheet steel construction, with walls about 4 in. thick, fairly well insulated except on the bottom where the concrete floor allowed the escape of considerable heat. The oven was equipped with a fan driven by a variable speed motor and so arranged that the air could be exhausted or recirculated or a portion could be exhausted and the rest recirculated. Accurate thermostatic control was provided. Accompanying illustrations show views of the oven, and a chart of a representative day's run is reproduced.

Three core mixtures were experimented with, as follows:

	No. 3 Molding Machine Work Per Cent	No. 4 Heavy Bench Work Per Cent	No. 7 Splicer Cores Only Per Cent
Silica sand.....	63.95	16.03	97.30
Molding sand.....	21.35	....	....
Sand blast dust.....	11.88	19.60	....
Old core sand.....	....	64.14	....
Oil.....	1.78	....	2.03
Dextrin.....	1.04	00.23	0.67

As it was desired to ascertain the conditions under which cores of the very best quality could be produced, a number of runs were made on each of the above mixtures, varying the temperature and time of baking. Test cores of two kinds were used to judge thoroughness of the baking; tensile, using the regulation brass molds designed for making specimens for cement testing and compression, using a 2-in. tube. A compression and a tensile test piece was placed on the top, middle and bottom shelf with each lot of cores.

Prior to making the tests, a number of runs were made to determine what would be a satisfactory ventilation of the oven. It was run at a constant temperature of 400 deg. Fahr. and loaded with weighed charges of production cores, test pieces being placed on the top, middle and bottom shelves. The rate of change of the air in the oven was controlled by the dampers and the speed of the motor, the air pressure being registered with pitot tubes. The changes of air were obtained by calculation from the volume of the oven, pressure temperature of the air exhausted and recirculated. Recirculating the air 30 times per hour was the rate decided upon and used in the tests.

The average results on the three core mixtures were as given in the accompanying tables.

The results obtained on the comparative tests made show that the electrically heated oven produces cores having from 50 to 200 per cent more strength than the fuel fired ovens.

In baking large cores containing oil, it is customary to heat at a low temperature at first to allow the moisture to escape before the oil hardens. The first tests on No. 3 core mixture showed, however, that this is unnecessary on small cores.

The excessive moisture (26.70 per cent) which was found on run No. 2 for the core sand, did not crack the cores or injure them in any way. It is

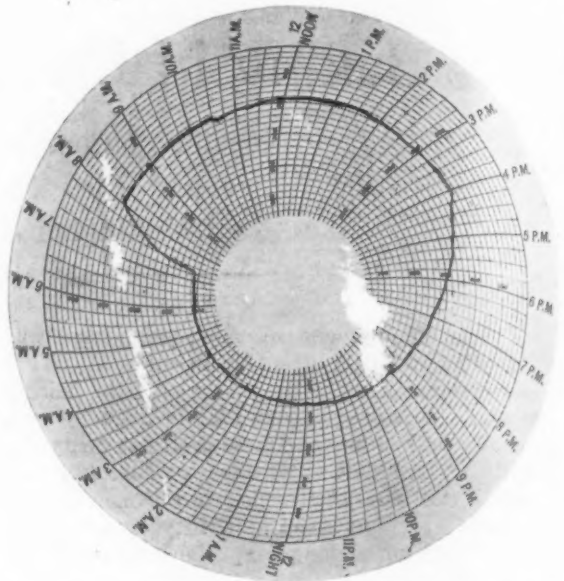


Chart Obtained from Test of Electrically Heated Core Oven Equipped with New Westinghouse Thermostat

undesirable, however, as energy is wasted in expelling it.

An inspection of the results obtained indicates that baking at 450 deg. Fahr. for somewhat less than one hour gives the best results. The dextrine binder seems to be weakened by prolonged baking above 400 deg. Fahr.; however, over baking 50 per cent or more does little harm. One lot of oil cores baked over night by neglect to turn off the current were found to be of good quality.

When forcing an oven at a high temperature, an alarm clock is useful to indicate when the cores should be removed to prevent over-baking and waste of heat.

It was found that the weight of the cast-iron core plates was almost equal to the weight of the

Comparative Tests in Electrically Heated Oven

Run No.	Temp. Deg. Fahr. Initial	Temp. Deg. Fahr. Final	Time Hours	Crushing Load, Lb.	Tensile Strength, Lb.	Per Cent Moisture in Core Sand	Per Cent Moisture in Baked Cores	Power Kw.-Hr.
No. 3 Core Mixture								
1	300	300	3	253	21	5.74	0.18	40
2	300	350	2 1/2	600	50	26.70	0.12	30
3	300	400	1 1/2	1,712	192	5.44	0.13	30
4	300	450	1 1/2	1,739	187	5.44	0.13	40
5	300	500	1 1/2	1,244	166	5.44	0.12	50
8	450	450	3/4	1,965	121	5.44	0.16	20
9	500	500	1	1,516	143	5.44	0.11	20
No. 4 Core Mixture								
10	450	450	1	1,171	87	6.38	0.18	20
13	350	350	1 1/2	776	46	6.38	....	20
14	450	450	1 1/4	1,550	142	6.38	0.14	30
15	300	300	1 1/2	675	66	6.47	0.13	20
16	350	350	2	802	95	6.47	0.16	40
17	400	400	1	906	88	6.47	0.14	20
18	400	400	1 1/2	1,206	105	6.47	0.16	20
No. 7 Core Mixture								
19	300	300	1	815	97	....	....	20
26	400	400	1	1,856	182	....	....	30
27	400	400	1 1/2	2,209	194	....	....	40
28	400	400	2	3,854	342	....	....	50
29	350	350	1	754	66	6.13	....	20
30	350	350	1 1/2	1,313	118	6.13	....	30
31	350	350	22	2,690	180	6.13	....	50

cores. It is desirable to reduce the weight of the core plates to the minimum consistent with stiffness. However, the current loss due to heating these plates is only about 20 per cent of the radiation loss of the oven.

The oil used in the test was a compound oil containing mineral oil. Stronger cores would have been obtained with pure linseed oil.

Where core ovens are fired with gas, oil, coal or coke, large volumes of carbon dioxide gas are produced even where combustion is perfect. This gas, while not poisonous in itself, vitiates the air of the core room, making it an unhealthy place in which to work. Combustion in fuel fired ovens, however, is never perfect, and instead of the waste gases consisting of carbon dioxide, they generally contain large amounts of the highly poisonous carbon monoxide, while acrolein and other compounds irritat-

inventor. The engineering details of the oven installation were attended to by O. A. Colby and M. R. Armstrong.

FABRICATORS MEET

Taxation, Readjustment of Wages and General Business Conditions Considered

PITTSBURGH, Nov. 20.—Adoption of a resolution favoring the abolishing of the excess profits tax, a revision of the income tax and the substitution of more equitable taxation laws and the appointment of a committee to consider methods of stimulating the use of fabricated material were the outstanding developments of a meeting of the National Steel Fabricators' Association at the William Penn hotel here yesterday. There was a full and free discussion of the labor situation and of the necessity of reducing costs and the effecting of economies wherever possible.

Comparative Tests in a Continuous Overhead Gas Heated Oven

Run No.	Temp. Deg. Fahr. Initial	Temp. Deg. Fahr. Final	Time Hours	Crushing Load, Lb.	Tensile Strength, Lb.	Per Cent Core Sand	Moisture in Baked Cores	Power Kw.-Hr.
6	2	467	No. 3 Core Mixture 62	5.44	0.12	..
11	2	776	No. 4 Core Mixture 65	6.38	0.14	..
32	2	677	No. 7 Core Mixture 87	6.17	...	..

ing and injurious to the eyes and nose are also present. With imperfect combustion we also find soot being deposited on the walls of the core ovens and on the cores themselves. In many foundries the core room force consists of young girls. This class of labor is especially susceptible to fumes, and hence electrically heated core ovens are not only desirable in such situations but absolutely necessary if the labor is to be kept efficient.

The following conclusions are drawn from the test of this electrically heated core oven: A practi-

Walter Drew, counsel for the National Erectors' Association, who addressed the meeting by invitation of the association, laid special stress upon the necessity of maintaining the open shop; also that while employers should treat workmen with entire fairness, the latter should be acquainted with the critical situation in industry and with the need of greater efficiency and of the greatest possible production.

G. H. Blakeley, Bethlehem Steel Corporation, also addressed the meeting and urged that the fabricators get their "houses in order" and to as far as possible endeavor to reduce costs. In effecting economies, how-

Comparative Tests in an Oven Fired with Gas and Oil

Run No.	Temp. Deg. Fahr. Initial	Temp. Deg. Fahr. Final	Time Hours	Crushing Load, Lb.	Tensile Strength, Lb.	Per Cent Core Sand	Moisture in Baked Cores	Power Kw.-Hr.
7	(25 min.)	832	No. 3 Core Mixture 140	5.44	0.16	..
11	2½	1,519	102	...	...	..
12	1	633	No. 4 Core Mixture 57	6.38	0.09	..
13	2	779	78	6.38	0.16	..
24	3	1,167	No. 7 Core Mixture 110	6.17	...	..
25	3	1,334	101	6.17	...	..

cally uniform temperature can be obtained in all parts of the oven; the temperature can be held to within 5 deg. Fahr. plus or minus of any desired temperature; the only gases given off by the electric core oven come from the core compounds used and these are not excessive in amount or dangerous in character; small oil, dextrine or oil and dextrine cores can be satisfactorily baked in less than one hour at 450 deg. Fahr.; the cores when baked in the electric oven are from 50 to 200 per cent stronger than when baked in the fuel fired ovens; a greater input of heat units is possible in the electric core oven without injury to the cores than is possible in fuel fired core ovens; while no attempt was made to obtain a very accurate reading of the power consumed in making the tests, it is estimated that about 12 lb. of green cores were baked for each kilowatt hour.

J. R. McClain supervised the tests described and P. E. Demmler designed the demonstration outfit illustrating the new thermostat, of which he is the

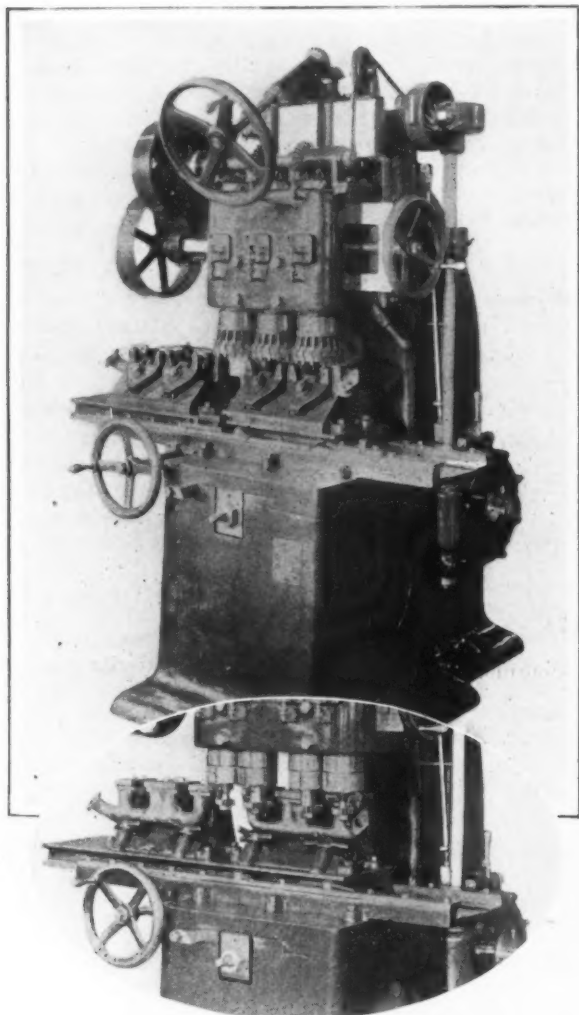
ever, he asserted that a reduction in wages should be the last thing to be considered, and that before this was attempted, the workmen be urged to become more efficient.

Discussion of the business situation brought out that generally the present dullness was not likely to be of long duration. Lack of business was attributed by speakers to the credit situation, the unstable steel market and the inequitable prices of other materials. It was the general opinion that these conditions were likely to be corrected at an early date and that then would follow a revival of business. Means of stimulating the use of fabricated products were freely discussed and this matter as well as the more general use of pressed steel was consigned to a committee appointed to investigate and make recommendations.

To provide for future expansion, the Falcon Steel Co., Niles, Ohio, has purchased 92 acres adjoining its present location, giving it a site of approximately 200 acres. President Lloyd Booth states it is unlikely additions will be made next summer.

Multiple Spindle Milling Machine with Transfer Table

A recent modification of the Coulter automatic multiple spindle profile milling machine has been brought out by the Automatic Machine Co., Bridgeport, Conn. The accompanying illustration shows a 3-spindle and a 4-spindle machine, each equipped with a transfer table. This table carries one jig in the cutting position, while the other jig is in position for unloading and loading,



Three-Spindle Milling Machine with Transfer Table. This table carries one jig in the cutting position while the other jig is in position for unloading and loading. The insert shows a 4-spindle machine

thus giving practically continuous milling. Furthermore, there is the additional saving in production time due to the use of multiple spindles cutting at once.

The machines shown are for milling the face and under side of manifold bosses. A completed manifold is turned out in the time it takes a single cutter to cross the shortest dimension of a single boss. By cam action, the work is automatically fed into the cutters and withdrawn. The camming is arranged to give a quick advance, normal feed while cutting, and quick return, with an automatic stop, so that the minimum time is consumed in non-productive motion. Each spindle has an independent adjustment for depth, and the whole spindle carrier is raised and lowered by the hand wheel above it, or moved horizontally by the wheel at the right. An adjustment on the transverse position of the table is provided, and the table is moved longitudinally from the cutting position for one jig to the cutting position for the other, by one turn of the hand wheel on the left.

This is essentially a single purpose production machine, but its adaptability for a wide range of work is apparent, as the position and number of spindles, and the arrangement of cams can be made to suit the operation. Automatic stops can be provided, to be used or

not according to the nature of the work and expertness of the operator. The spindles are driven by either direct bevel or spiral gears, as may be deemed best in each case.

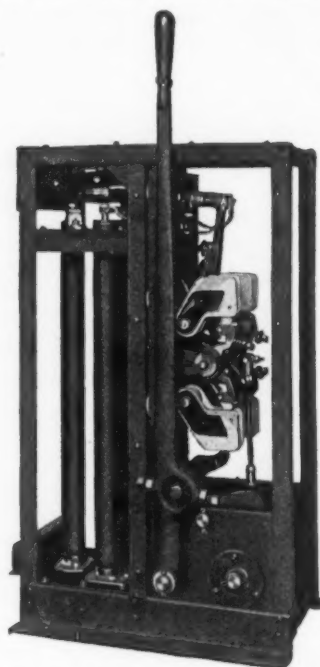
This type of machine, it is pointed out, shows economy in production time and cutter wear compared with single cutter types of continuous millers, and the vertical spindles give opportunity to reach work which could not be touched by slab milling.

Clapper-Type Controllers

A new line of mill, crane and hoist controllers to supplant their types Q, R and S controllers for the same service has been developed by the Allen-Bradley Co., Milwaukee. The new controller, made in sizes ranging from 1 hp. to 150 hp., is known as the clapper-type controller, primarily because all switching and contact-making is done with the clapper-switch contactor.

The controller is further simplified by the use of the company's graphite compression resistor, mounted within the controller, avoiding the use of grids or wire-wound resistors and the need of step contacts. All speed control is obtained by pressure variation upon the resistor column applied by the control lever.

Other features of the new line of controllers, for either direct current or alternating current, are outlined as follows: Clapper contactors of copper-to-copper, rolling type are used; clapper switches, mounted inside the controller, are mechanically operated, and perform all switching up to 100 hp.; larger controllers use external magnetic clapper switches actuated from a pilot switch within the controller; graphite compression resistors simplify wiring and inspection, and can be removed as readily as a cartridge fuse; a single lever gives full control in either direction without steps



Clapper Type Controller Made in Sizes from 1 Hp. to 150 Hp. for Mill, Crane and Hoist Service

or jumps, and also actuates the clapper contactors; steel frame construction is used with pressed steel inclosing covers, reducing the controller weight; switch cams, positively open and close the switch clappers in either direction.

Optional features are offered, such as under-lever control gear, limit switch or brake connections and inclosing covers for the resistor compartment.

The Godfrey Conveyor Co., Elkhart, Ind., announces a contest extending until Nov. 30, with prizes ranging from \$50 to \$10 to be awarded for the best time during the period of the contest in unloading a car of coal with a Godfrey conveyor.

Founders Cheerfully Face Readjustment

National Association Considers Post War Problems — Progress of the Open-Shop Movement — Importance of Education of Foremen Emphasized

BUSINESS depression and the high cost of travelling do not interfere with attendance at the convention of an association when it is really a live organization and the members are deeply interested in its work. This fact was demonstrated at the twenty-fourth annual convention of the National Founders' Association held at the Hotel Astor, New York, last Wednesday and Thursday, at which a new record of attendance was made.

The prevailing sentiment was one of cheerful acceptance of present business conditions. The talk in the lobbies of the hotel indicated that the members realize that a period of readjustment has set in and that it will be necessary for business men to realize that their profits will be greatly reduced. There was also a feeling that while some business conditions will be less favorable, there will be fewer labor troubles next year than for several years. There was not, however, any expression of intention to get even with labor for taking advantage of war times to promote the closed shop, but rather a de-

termination to readjust labor conditions on the basis of fairness to all concerned.

The year has been one of prosperity for the association. The work of the committee on membership under the direction of H. J. Boggis, chairman, has resulted in a considerable strengthening of the association, not only in the net gain of 49 members, but in the importance of the new membership. Outstanding features of the meeting were the address of James A. Emery on "The Progress of the Open Shop" and a paper on "Modern Foundry Equipment" by Joseph J. Wilson, published in full elsewhere in this issue. One feature of the meeting was the setting forth of the efforts of the leading moving picture companies to assist in Americanization, particularly in the advocacy of sound economic principles. Relaxation from the serious dinner programs of the war period found expression in the entertainment in lighter vein at the convention dinner Wednesday night, at which there were no speeches.

An Eventful Year Reviewed

PRESIDENT BARR'S address was an interesting review of the labor situation during the past year. Extracts from this address were published on page 1372 of the Nov. 18 issue of THE IRON AGE.

Commissioner A. E. McClintock read his annual report, which was in part as follows:

"At the time of our last annual meeting, the association was assisting in combatting strikes in the shops of 46 members, located in 25 towns, from which 1788 molders were on strike. During the year, the Administrative Council authorized that support be given to 28 additional members, located in 23 towns, from which 1391 molders were on strike, making a total of 74 shops given aid this year. Of the above number, 54 shops are on a normal basis, and 20 shops are being given a limited assistance, which could be much further decreased if we had need for the association molders elsewhere.

"All the strikes in which the association has given aid the past year, have been, or are being, combatted to a successful conclusion, and the open shop policy firmly established.

Condition of International Molders' Union

"The receipts and disbursements of the national treasury of the molders' union for the 12 months ended Sept. 30, 1920, given in round figures are as follows:

Income	\$1,159,000
Disbursements:	
Strike benefits	\$671,000
Management and other expenses.....	326,000
	997,000
Gain for period	\$162,000
Total assets, national treasury.....	313,000
Average paid membership for 1920.....	61,000

"Again, I would like to emphasize the growing scarcity of all around high-grade molders, and the necessity of giving organized instruction in the shops by men who are employed solely for that purpose. Many are the foundries which are glad to use good molders, but all too few are the number which are doing anything to produce them. Instead of making an intensive effort to develop the unskilled and inexperienced worker, and fit him to the job, there is a too general tendency to go outside to engage molders with the necessary skill acquired elsewhere.

"Continued competition for the more highly skilled molders is most unsatisfactory, and is an important element in increasing labor turnover and unrest. The old apprenticeship training for molders is the exception instead of the general practice, and comparatively little is being offered as a substitute. This is a subject which has been referred to in many previous reports, and while there is a pretty general consensus of opinion that the problem is a serious one, it has not received the attention from executives that it should, or which eventually they will be compelled to give. The foundry industry is not training men to become skilled molders in anything like the numbers necessary to carry on the trade, and the necessity for some system of organized instruction for the inexperienced worker is each year becoming more pressing.

An Educational Problem

"Employers are pretty generally agreed that our so-called labor problem is very largely an educational problem. The labor unions preach and practice a false philosophy, which reduced to its final analysis, is that it is to the advantage of the individual worker to do as little work as possible and exact the highest possible wage. On this theory the molders' union favors the limiting of production, opposes molding machines and labor-saving machinery, advocates shorter hours, opposes premium, bonus and piece work systems, which stimulate production. The unions are working on the uneconomic theory that by producing less they can divide more. The great mass of the workmen do not comprehend that all wages, both to labor and to capital, must be paid out of production.

"When labor troubles occur, it will usually be found that some outside agitator has gained the confidence of the men to the extent that they are led to believe their interests lie in allegiance to the union as opposed to the company by which they are employed. All employers are aware of these things, but the problem is how to get the employer's side of the employment relation to the men in a way that they will understand. How can he best meet the specious arguments of the paid agitator?

"It is my observation that one of the most effective, if not the most effective, method of establishing direct

contact between the management and men is through the foremen. To a great majority of workers, the foreman is the company, the employer. It is he who very largely decides whether the individual employee stays or whether he goes. The worker's opinion of an employer is almost entirely founded on his opinion of the foreman from whom he takes orders. Unless the foreman is in close enough contact with the management to understand the company policies, the spirit of the management, how can it be expected that the men under him will understand?

"The point I wish to make is that the foreman is the direct and personal representative of the management in daily contact with the men. If a better understanding between management and men is to come, if a spirit of company loyalty, morale, co-operation and the oldtime joy of achievement and enthusiasm in getting the job done is to be brought about, I believe too much stress cannot be laid on the importance of developing the foreman for constructive leadership. The foreman equipped with sound arguments and logical statements of fact can stimulate thought among his men and do much to lessen the influence of the labor agitator.

"The open shop, or American plan of employment, is steadily gaining ground in this country, and it will eventually triumph because it is just and right. We have already traveled too far toward industrial freedom and the right of the individual to work where he pleases, to ever turn back. Collective bargaining through trades unions has had its day and has been found wanting. The open shop is succeeding because it is being made a better place to work than a union shop.

"By the use of labor saving equipment and modern methods, which in union shops are bitterly opposed, the worker can greatly increase his production and opportunity for advancement. He is also enabled to have his pay measured according to production and not according to time.

"The general public is coming to have a much clearer understanding of the evils of unionism, with its unwise and vicious leadership, and I believe we are rapidly approaching a better day in the relationship between employer and employee."

Growth of Membership

H. J. Boggis, chairman of the membership committee, reported that the association now numbers 673 members, the largest in its history, and a net gain for the year of 49. Mr. Boggis also reported for the safety committee, which during the past year has sold close to \$60,000 worth of safety appliances to members.

Secretary Taylor, in his annual report, referred to the publicity for the open shop movement being obtained through widespread circulation of the association's publication, "The Open Shop Review." In addition to the membership, this paper goes to teachers, students and ministers.

The Wednesday morning session was concluded by the introduction of the association's new general counsel, James A. Emery, appointed to succeed the late George F. Monaghan.

J. Edward Meeker of the New York Stock Exchange delivered an instructive address on "The Relationship of the Stock Exchange to Industry," explaining in detail the way in which the security market functions and illustrating its importance in affording a means by which industrial companies may readily dispose of their securities. He stated that \$60,000,000,000 worth of stocks and bonds are listed on the New York Exchange.

Labor During the World's War

The address by James A. Emery, the newly elected counsel of the National Founders' Association, who is also counsel of the National Industrial Council, Washington, was on "The Progress of the Open Shop," and it was a masterly review of the history of labor in the United States during the war. Mr. Emery was greeted with enthusiastic applause as he concluded. The address will be published in a later issue of THE IRON AGE.

Col. T. C. Dickson, commanding officer Watertown Arsenal, Watertown, Mass., spoke on "Industrial Relations in Arsenals of the Ordnance Department, United

States Army." He read at length from the laws governing employees of the Government, and dwelt particularly upon the leaves of absence, days off, compensation for disability, and the payment of a bonus of \$250 a year to each employee. He regarded the number of days for which employees are paid when they do not work as excessive. He gave figures to show that Government employees at arsenals received 31 per cent more than employees in private plants. In spite of the good pay, however, the Civil Service Commission had trouble in keeping enough eligibles on its list. Colonel Dickson referred to the shop committees at Watervliet and the works organization at Rock Island Arsenal and expressed the opinion that the latter is seriously defective. He said that the labor unions had declared their opposition to the plan in force at Rock Island.

C. C. Pettijohn, vice-president of the Selznick interests, New York, gave an interesting account of the efforts of moving picture companies to promote Americanization. He expressed his belief in the power of suggestion rather than direct preaching, and said it is the aim of leading moving picture concerns to put Americanism into every picture. He spoke particularly of the work of the patriotic committee, of which Franklin K. Lane is chairman, which is working along this line. Moving pictures illustrating false economic ideas are being opposed and sound doctrines taught are thrown upon the screen.

The Open Shop in the Southwest

The talk on the open shop movement in the Southwest by W. S. Mosher, manager Mosher Mfg. Co., Dallas, Tex., was of particular interest because this district is usually thought of as a farming and oil region only, with few industrial problems; also because of the newness of the open shop organizations and because of its geographical remoteness from the more distinctly industrial sections of the United States. In introducing the speaker, Mr. Barr said that Texas had gone farther than New York with the open shop movement. Mr. Mosher remarked that it was appropriate that the first open shop movement started in San Antonio, Tex., the scene of the exploits of Travis, Bowie, Crockett and Gen. Sam Houston against the Mexicans. These men conquered obstacles then; the industries are overcoming them now. On May 1, 1919, the Kline Creamery Co. had completed 90 per cent of its new factory building, when Mr. Kline sent a non-union man to string electric wires. The union men threw down their tools. The union decreed that Mr. Kline pay a \$300 fine and employ all union labor. Then the employers and members of the Chamber of Commerce of San Antonio held an indignation meeting and formed the open shop association which has operated successfully since.

In Beaumont at that time many ships were being built for the Government. Nearly everything in this city was organized. The climax was reached when a retail store was picketed by negro women. An open shop association followed which bought out many stores and shops and operated them as non-union.

An open shop association was formed in Dallas on Nov. 17, 1919. Since then \$50,000 has been spent in conducting it. Seventy-five per cent of the building in this city is being done by non-union labor. Workmen are imported from as far away as New York and California.

Mr. Mosher stated that he had been with his company for 30 years. It was made an open shop in 1907. Previous to this there had been so many strikes that the remark was frequently made by a customer when placing an order: "Will you be having another strike?" Since 1907 only two employees have left this company because of grievances. Nineteen cities are members of the Southwest Open Shop Association.

"The time of the most confidence in an open shop organization is the time of greatest weakness, for the opposition never rests," enjoined the speaker. "Many corporations spend \$100,000 yearly in advertising their products to the public, but never give consideration to selling the company to the employees. I often gathered my white employees together and gave them talks on economic conditions. I explained to them that we, as a company, had no money—we did have credit; that

any progressive company, if forced to liquidate in 60 days, would go bankrupt. Several of the men told me after the talk that I had given them something to think about and had opened their eyes. An employer to-day should be liberal, broad-minded, considerate and constructive."

Mr. White's Talk

Joseph J. Wilson, plants manager Saginaw Products Co., Central Foundry plant, division of General Motors Corporation, Saginaw, Mich., read a paper on "Modern Foundry Equipment," published elsewhere in this issue of THE IRON AGE. He dwelt at length on the new equipment in his plant, which was started Sept. 9, 1919, and which took over \$2,000,000 to build and equip. Mr. Wilson started work as a molder 50 years ago and is now considered an authority on up-to-date foundry equipment. He exhibited some photographs of his plant.

Melville P. White, Canadian Allis-Chalmers, Ltd., Toronto, Can., and president of the Canadian Founders' Association, gave an outline of the work of his association. It is a year and two months old and has over 100 members. He said: "We have plenty of material to work with; there are over 300 foundries in Ontario alone. We are planning to organize the metal trades of Canada and combine with our founders' organization. The labor situation is much improved in Canada after encountering many difficulties. Last year the foundries in Toronto were shut down for four months because of strikes. The Minister of Labor is an ex-union man and was not sympathetic with the activities of the founders." Mr. White made favorable mention of C. W. Burgess and Thomas Kennedy, both of whom are now with the Canadian Founders' Association and formerly belonged to the executive forces of the National Founders' Association.

College Men as Molders

Prof. A. E. Wells, Sibley College, Cornell University, Ithaca, N. Y., made a plea for the co-operation of foundrymen in giving summer employment to students in foundry courses in his university. Last summer 17 Cornell students were so placed and returned to college in the fall. Each made a report of plans for improving the foundry in which he was employed. Among the bad conditions found were: Dinginess, dustiness, unsanitary conditions; need of more space, cranes and co-operation of men. An attempt will be made to influence more students to enter the foundries. A system of prizes will be offered for the best reports made by students of their summer's findings and suggestions, the grand prize to be \$50, and a prize of \$20 for the best report from any school furnishing 10 or more students for foundry summer work.

The finance committee reported that no special assessment would be demanded this year unless an unforeseen number of strikes develop.

Election of Officers

William H. Barr, Lumen Bearing Co., Buffalo, was re-elected president, the election being accompanied by a hearty demonstration of approval.

Other officers elected were: Vice-president, J. Goslin, Joubert & Goslin Machinery & Foundry Co., Birmingham, Ala.; secretary, J. M. Taylor, 29 South La Salle Street, Chicago; treasurer, Chicago Trust Co., Chicago; honorary member of the administrative council, O. P. Briggs, Minneapolis, Minn.

The new personnel of the administrative council follows:

First district—C. C. Chesney, chairman, General Electric Co., Pittsfield, Mass.; Charles L. Taylor, vice-chairman, Taylor & Fenn Co., Hartford, Conn.; H. B. Johnson, General Fire Extinguisher Co., Providence, R. I.; F. M. Weymouth, Hunt-Spiller Mfg. Co., Boston; Charles Berger, the Eastern Malleable Iron Co., Naugatuck, Conn.

Second district—Louis P. Willsea, chairman, the Willsea Works, Rochester, N. Y.; George C. Forgeot, vice-chairman, Worthington Pump & Machinery Corporation, Buffalo, N. Y.; James Eastwood, Benjamin Eastwood Co., Paterson, N. J.; W. H. Thomas, Straight-Line Engine Co., Syracuse, N. Y.; Walter S. Smith, E. W. Bliss Co., Brooklyn, N. Y.

Third district—Alex. Jarecki, chairman, Jarecki Mfg. Co., Erie, Pa.; J. P. Allen, vice-chairman, Union Steel Casting Co., Pittsburgh, Pa.; H. E. Asbury, Enterprise Mfg. Co. of

Pa., Philadelphia; Nelson J. Darling, Erie Works, General Electric Co., Erie, Pa.; O. R. Read, Read Machinery Co., York, Pa.

Fourth district—C. W. Russell, chairman, Russell Wheel & Foundry Co., Detroit, Mich.; William M. Taylor, vice-chairman, Chandler & Taylor Co., Indianapolis, Ind.; J. M. Bashline, Star Drilling Machine Co., Akron, Ohio; H. A. Becker, Lakey Foundry & Machine Co., Muskegon, Mich.; Neil C. Lamont, Laidlaw Works, Worthington Pump & Machinery Corporation, Cincinnati.

Fifth district—A. H. Head, chairman, Waterloo Gas Engine Co., Waterloo, Iowa; C. H. Cole, vice-chairman, United Iron Works, Inc., Kansas City, Mo.; T. S. Hammond, Whiting Foundry & Equipment Co., Harvey, Ill.; Horace R. Culling, Carondelet Foundry Co., St. Louis, Mo.; R. W. Lea, Moline Plow Co., Moline, Ill.

Sixth district—John G. Osborne, chairman, Lakeside Malleable Castings Co., Racine, Wis.; L. R. Barrett, vice-chairman, Vulcan Iron Works, Winnipeg, Can.; Oliver Crosby, American Hoist & Derrick Co., St. Paul, Minn.; Frederick L. Sivyler, Northwestern Malleable Iron Co., Milwaukee, Wis.; E. A. Peterson, Valley Iron Works Co., Appleton, Wis.

Seventh district—W. M. Gartshore, chairman, McClary Mfg. Co., London, Ont.; J. M. Taylor, vice-chairman, Taylor-Forbes Co., Ltd., Guelph, Ont.; H. Cockshutt Plow Co., Brantford, Ont.

Eighth district—W. S. Mosher, chairman, Mosher Mfg. Co., Dallas, Tex.; W. D. Tynes, vice-chairman, Hardie-Tynes Mfg. Co., Birmingham, Ala.; L. J. Black, Beaumont Iron Works Co., Beaumont, Tex.; George M. Morrow, Jr., Birmingham Machine & Foundry Co., Birmingham, Ala.; C. A. Young, Lucey Mfg. Corporation, Chattanooga, Tenn.

There was a total registration of 364, or more than 50 per cent of the membership.

The Death of Mr. Monaghan

The announcement of the death of George F. Monaghan, general counsel for the National Founders' Association, came as a surprise to many present. Appropriate resolutions relating to his death were adopted. He died at his home in Detroit of heart trouble early in July, at the age of 43. He had been counsel for the association since 1904, at the same time carrying on his general law practice with his cousin, Peter Monaghan, in Detroit. He was remarkably successful, having secured injunctions against the molders' unions for picketing in instances where the local lawyers maintained such injunctions could not be obtained. He was graduated from Detroit University, College of Law, and passed all bar examinations before the age of 21, and had to wait a few months to attain the minimum age allowed by law for practicing. At the age of 22 he was the only Democrat in the Michigan House, where he attracted attention because of his youth and politics. He was a specialist in litigation involving labor disputes. He was always broad-minded and had great sympathy for the opposing forces. At the meetings of the Founders' Association he was one of the most popular attendants. He belonged to the Knights of Columbus, the Detroit Athletic Club and the Detroit Club.

The board of directors of the Empire Tube & Steel Co., College Point, N. Y., has decided the business of the company requires more room for expansion, and as its present location on high-priced land and in a thickly-congested section makes extension undesirable as at present situated, it was decided to open negotiations leading to its early removal to a more suitable site. The questions of proximity to markets and sources of raw materials also make removal imperative. John Fraser, consulting engineer, 30 Church Street, New York, has been retained to prepare plans for a complete plant that will enable the company to enlarge its present production and will also permit of future extension at any time without interference with operation. The plant will be of the most modern type, the buildings to be of steel and glass and the machinery of the most efficient design.

The Modern Steel Castings Co., Milwaukee, advises THE IRON AGE that the report recently published in some trade papers that the company's plant was destroyed by fire, is not true, as the fire caused very little damage and the plant is running at normal capacity.

Foundry Equipment in Modern Plants

Flexibility Needed in Plant Layout,
Machinery and Conveyors—Most Progress Made by the Corporation Foundries

BY JOSEPH J. WILSON

THE foundry industry may be divided into two general classes: Heavy and light jobbing and heavy and light production foundries. The majority of the foundries of to-day are engaged in the making of heavy and light jobbing castings, which may vary from a lathe bed to a toy pistol, and whose production from a given pattern would, on the average, not exceed 30 castings per year.

The buildings and equipment of these foundries must be general in scope and adaptable to a wide range of usefulness. Special stress should be laid on the laying out of the plant. The buildings should be well lighted, heated and easily ventilated. The material yard should be laid out so as to reduce the handling of material to a minimum, and if possible should be served by a switch and traveling crane. The lay-out of the foundry, core room and cleaning room, must be flexible so as to permit the handling of a great variety of jobs without making changes. For the heavier class of work the over-head traveling crane in the foundry, as well as the wall jib crane, with either electric or air hoists, has become indispensable. The molding machines must necessarily be confined to the most general types,

*A paper read before the twenty-fourth annual convention of the National Foundrymen's Association at New York, on Nov. 18. The author is plants manager, Saginaw Products Co., Central Foundry plant, Division of General Motors Corporation, Saginaw, Mich.

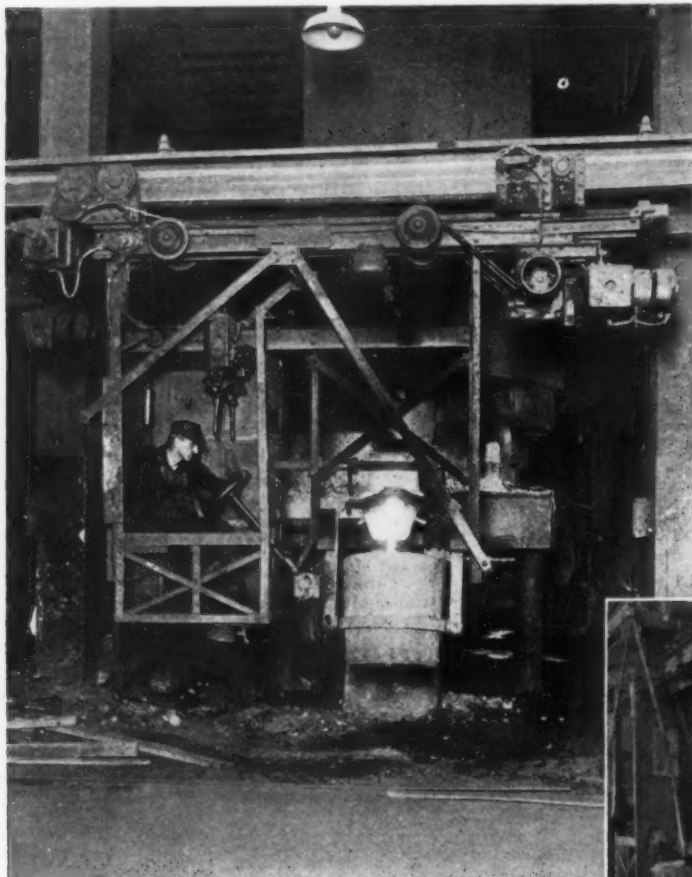
on which no mounting of patterns is necessary, such as plain jolts and plain hand or power-jolt squeezers of the standard type also.

The core room should have electric air hoists for rolling heavy core boxes and handling large cores. A plain jolt machine of the proper size would be an aid in almost any jobbing core room.

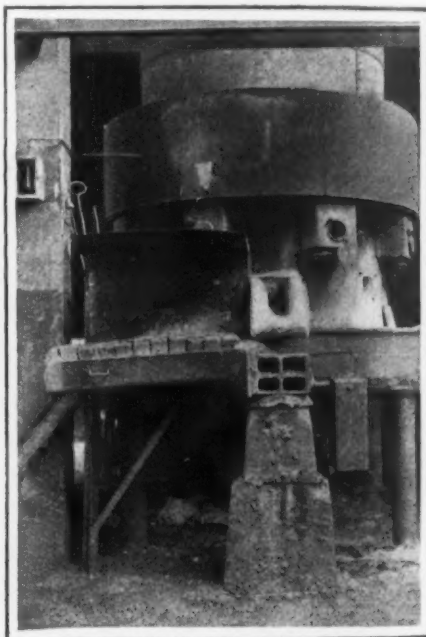
The cleaning room of a modern jobbing foundry should have a sand blast for cleaning the castings, air hammers for chipping, and cranes and hoists for handling the heavier castings; tumbling mills and grinders for the smaller work.

Three Classes of Production Foundries

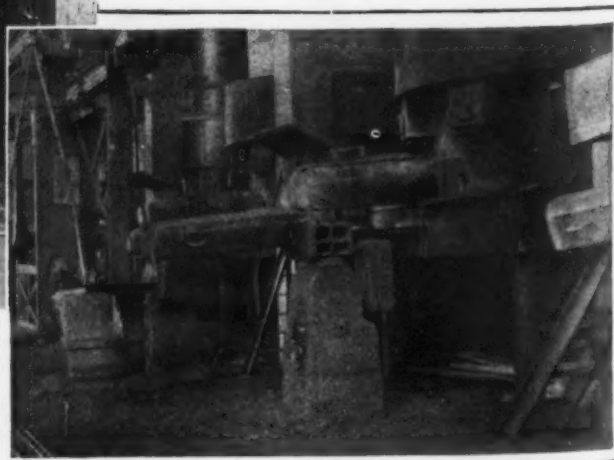
The production foundry can be sub-divided into three classes: The specialty foundry, which confines itself to one, or a very small variety of castings, and is



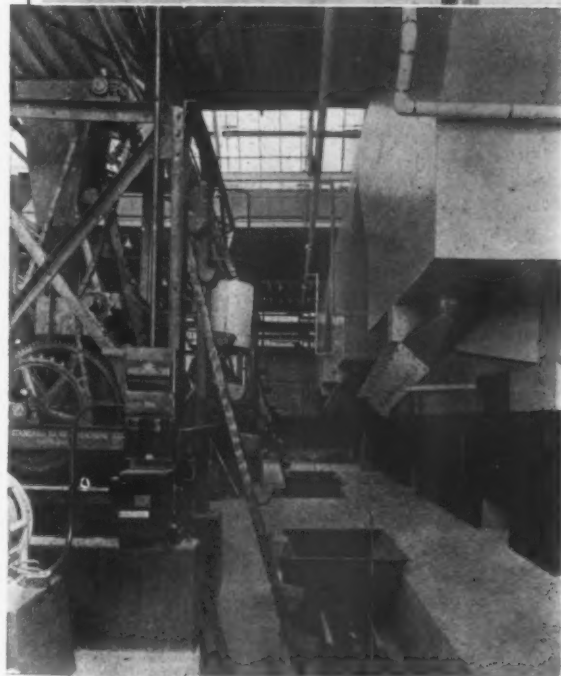
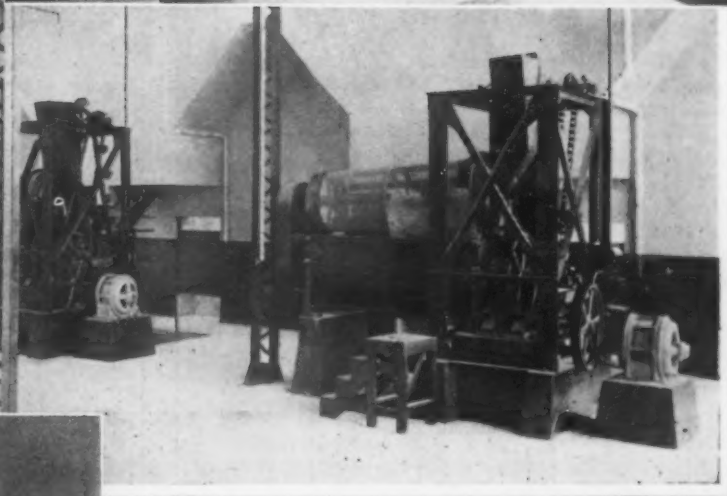
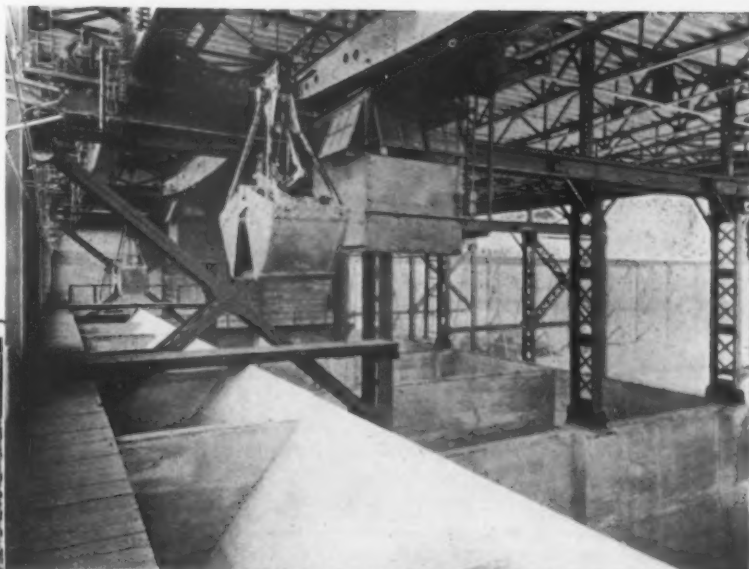
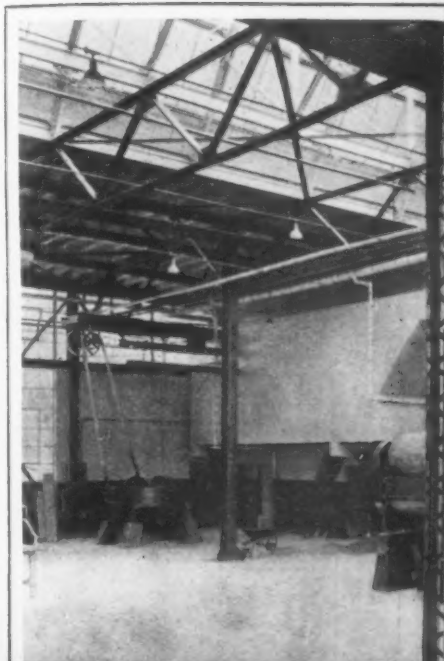
Two Monorails, on Which the Ladle Carrying Cranes Operate, Pass the Cupolas, Facilitating Speed in Tapping and in Handling the Metal



A Movable Extension, Operating on Hinges, Makes It Possible to Tap Into a Ladle Suspended from Either Monorail



The Sand Handling Equipment, Using Grab Buckets, Bins, Chutes, Conveyors, etc., Makes for the Efficiency of This Department



therefore in a position to build its equipment around a single product, making the molding and cleaning operations as well as the sand handling almost automatic.

An extreme type of this class is the Enterprise Foundry Co., Kewanee Boiler Co., Kelsey Wheel Co., French & Hecht Foundry; James B. Clow & Sons, cast iron pipes, and the Crane Co.

The next class I have in mind is the jobbing production shop, which is wholly dependent on outside work and will accept only orders insuring a steady production for a given period. The pattern equipment may consist of gated patterns, match plates, stripping plates, or split pattern plates, rigged and furnished according

to the specifications of the foundry; this has to be governed somewhat by the available machine equipment.

In order to get the benefit of the latest developments in molding and core machines some manufacturers have adopted the policy of buying the machines, mounting the patterns, building the flasks, and then turning the whole equipment over to a foundry. This relieves the foundry of a great initial expense, and is in most cases quite desirable.

For the third class I have in mind the so-called corporation foundry, which is connected with a manufacturing institution which turns out a standard product, the size and weight of which will remain within close limits from one season to another, such as agricultural implements, radiators, valves and fittings, and automobiles.

Corporation Foundries Have Been Most Progressive

The foundry industry owes its rapid development in the equipment line of the last few years to these foundries. They have encouraged and adopted new developments in building and equipment construction on a scale, that, from a financial standpoint alone, would be out of question in an independent jobbing shop.

The developments of the past few years have given us the multiple story foundry, such as the Buick Foundry, Deere & Co.'s harvester plant foundry, the French & Hecht Foundry, Crane & Co. foundry, and the semi-automatic foundry, where elaborate conveyors form a predominant part of the permanent equipment and building construction, such as the foundries of Dodge Bros., Ford Motor Co., Sampson Tractor Co., and the new plant of the Aluminum Castings Co. We still have the modern foundry in which conveyors are practically eliminated, and where the molds are shaken out and the sand tempered on the floor. Since, from the standpoint of investment and operating expense, neither of the

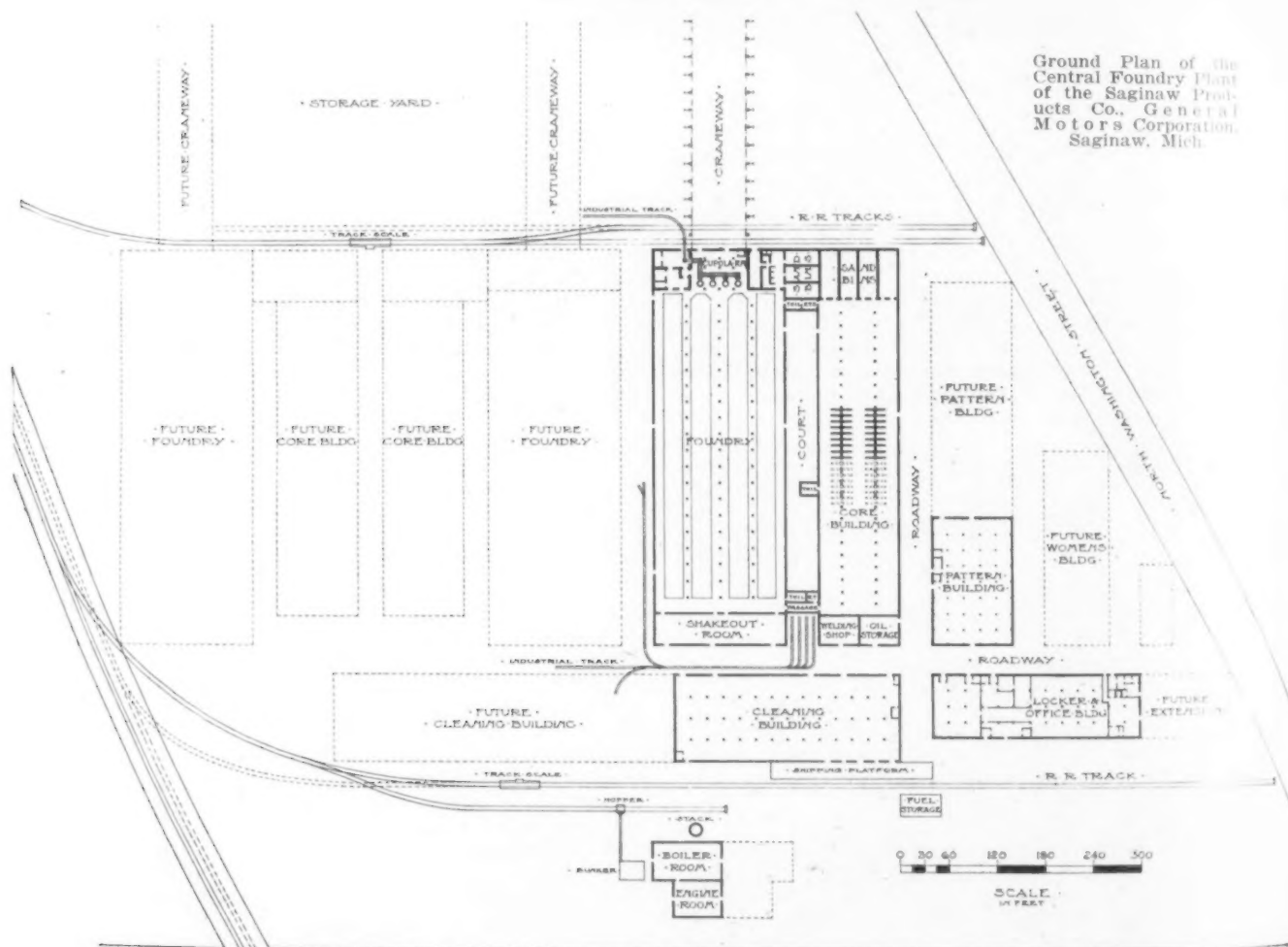
above types has established any marked superiority, all these types must be accepted as modern. My personal choice is the one-story foundry with limited, or no, permanent conveyor equipment, on account of its great flexibility and absence of vibration.

What is true of the buildings of a foundry is also true of machine equipment. A machine may be up-to-date for one job and wholly out-of-date for another. For example: A plain jolt may comprise the latest thing for a modern jobbing shop, but would be out-of-date and indicate antiquated methods if applied to a cylinder block for an automobile motor. While some of our modern equipment is designed for the purpose of improving the quality of the product manufactured, we find that the necessity of saving labor outweighs all other considerations.

The handling of material plays a big roll in the foundry, and should therefore receive considerable attention in designing and equipping a plant. At the Buick foundry we found that for every ton of castings

age room holding from 20 to 30 cars, according to the size of the plant, may be provided adjacent to the charging platform and on the same level. A hopper at the level of the track receives the coke, and hoists it by means of a bucket elevator up to the storage room. A monorail system in connection with an elevator also gives excellent service.

The modern equipment for handling the molding and core sand differs considerably and is largely controlled by local conditions. Where the foundry is located on high ground a basement can be provided and the sand unloaded by gravity directly into the bins. In a multiple story foundry where the sand can be stored on the first or ground floor a belt conveyor running from hoppers located near the railroad tracks is a good means to distribute the sand into the different bins. A unique and novel installation can be found at the Central Foundry. It consists of a series of concrete bins, open at the top and under one roof, which also extends over the car tracks. The bins are located at the



produced we had to handle 64 tons of material, in spite of the fact that the layout of the plant made a continuous flow of material possible.

The Magnet a Great Labor Saver

A great deal of labor can be saved in the properly arranged yard, equipped with an overhead traveling crane with electric magnet and grab bucket. With a magnet, one operator and one laborer can unload a car of pig iron in the average time of 45 min.; this takes into consideration every type of car and takes care of an average distance of 50 ft. To do the same job without a magnet, even on a piece work basis, would require at least 15 men. If the yard is so laid out that a car can be spotted opposite the pile, 25 min. is a good average time. If space permits, the yard should be laid out so that the same crane can also supply the cupola charging platform with iron, limestone and coke. The coke may be stored in the yard and handled with a grab bucket, or to avoid the crushing of coke, a stor-

end of the core room and adjacent to the facing sand room. Overhead bridge cranes equipped with grab buckets, unload the cars; these same buckets also take the sand from the bins and feed it into hoppers which extend through the core room walls. The outlets of the hoppers are about six feet above the floor and are equipped with clam shells. By locating these hoppers directly over the sand mixers, the mixers can be loaded by simply opening the clam shells. To accommodate all types of cars a shallow pit is provided under the track, extending far enough on each side to permit the dropping of the grab bucket between the track and the pit wall. With this arrangement one crane operator and two laborers who guide the bucket into the car or pit as the case may be, and who also trim the corner of the car, can unload an open car of sand in the average time of 45 min. During the summer when core sand comes in daily, the sand is unloaded directly into the hoppers leading to the core room. Since the outlets of these hoppers are directly over the sand mixers, about



Part of the Core Department Where Heavy Work Is Made Light for Core Girl Operators. At the left center can be seen the special type of roll-over machine

40 per cent of the core sand is handled only once before it is mixed and ready for the core maker.

The Electric Furnace, the Main Melting Innovation

The melting equipment has not undergone any radical changes; the recent developments are practically all confined to the electric furnace. Some cupolas are provided with charging machines which tip the charge from the truck into the cupola; another charging system consists of a bottom-dump monorail car, in which the charges are placed and run into the furnace. While some of these are being operated successfully by foundries making fairly heavy work, the foundries making light castings which require uniformly hot iron are slow to replace hand charging.

The handling and rehandling of the sprues and scrap in the foundry and on the charging floor is quite a large item, and in order to reduce this handling labor a second charging floor can be constructed above the regular charging floor. The sprues are collected through the foundry in steel dump buggies which hold just about enough for one charge. The buggies are collected through the shop by a tractor and taken to the elevator leading to the charging platform. Here the loads are weighed and the charges corrected. The charge is now run up to the upper platform and tipped into the cupola, the distance between the two doors being sufficient to spread the scrap evenly.

The modern equipment used for distributing and pouring iron covers a long range. It may consist of hand-pushed or electrically-driven ladle buggies running on a track or on the bare floor; it may be a heavy overhead traveling crane, a pouring bridge, a ladle suspended from a trolley and moving along a monorail, or an electrically operated monorail crane of the

Delpher system. The monorail car with electric drive and hoist is perhaps one of the latest developments. This equipment gives excellent service in continuously-operating foundries, especially where long hauls are necessary. These cars travel at a speed of 480 ft. per min., and in order to run the cars at the maximum speed, switches should be eliminated as far as possible. Where it is necessary to have a double track system in front of the cupola it is more satisfactory to use a ball-bearing extension spout to reach the car on the outside track than to run on the inside track by means of a switch. This spout should be so constructed that it can be swung out of the way by the tapper when a car on the inside track is to be loaded.

Carrying the Molds to the Iron

Pouring devices of the Brilliant type work well if used in conjunction with the electric car. Conveyor systems which carry the molds to the iron have also received considerable attention of late, but since these installations also require in connection a return system for the sand, they must remain a part of the specialty foundry.

The mixing of core sand and facing, the handling and conditioning of the molding sand, are items of great importance in the modern foundry, and have therefore received considerable attention during the last few years.

For mixing the bulk of core sand my preference is for the combination of a riddle and a paddle mixer while for an oil sand mixture, such as is used in a cylinder jacket core, I have found the crusher type to give excellent service.

A modern installation for mixing facing may vary from a plain power riddle to a combination of a riddle, a crusher, and a centrifugal machine. A combination



A Part of the Cafeteria of the Foundry Where Employees Obtain Their Luncheons

of the last type is in operation at the Central Foundry and is giving splendid results. It consists of a cylindrical riddle located on the floor level, a Simpson mill and a Sellers centrifugal mixer on an elevated platform. The batch is made up in front of the riddle and shoveled into it by hand; a short bucket elevator raises the sand from the riddle to the Simpson mill, where the mixture is thoroughly ground. Another short elevator raises the facing to the top of the Sellers centrifugal mixer, which discharges the facing directly into the bins below. The capacity of one of these units is 158 tons per nine hours of continuous operation. A crew of three men, making up the batches and running the machinery intermittently can mix about 46 tons of facing per nine hours.

Machinery Devices for Handling Sand

The designing and perfecting of mechanical means for replacing human labor in the handling and conditioning of the molding sand have held the attention of the foundry engineer for some years back and have resulted in a number of very elaborate installations. They form the basis for the multi-story automatic and semi-automatic foundry. While the purpose of these installations is to save labor and get maximum production per square foot of floor space by making the operations continuous, the real purpose is a lower manufacturing cost, resulting in a greater return on the money invested in the project. While excessive claims have been made by some of the designers of these installations we are still waiting for excessive earning of profits resulting from these various lay-outs. It is true that these installations will show low costs on some individual operations, but after the maintenance and overhead charges are added on, the showing will usually take a different aspect.

The operations affected by the ordinary system would be molding, pouring and shaking out. If the molds are poured on the floor they are usually shaken out over a grate, beneath which a continuous belt conveyor receives the sand and carries it to a tempering station, which delivers it back to the floor ready for molding. For delivering the sand to the molder a belt or a push-plate conveyor is usually employed. This is especially true of the smaller class of work. Where the molds are taken away from the floor as fast as they are made and are poured at a central station, the shaking out is done at a certain point in the line, usually near the mixers. At the Buick foundry monorail cars are taking the place of conveyors. The molds are poured on the floor; the sand is dumped through a grate to the floor below where it is tempered by a man with a water hose. The sand is then picked up by a grab bucket suspended from an electric monorail car and moved to a hopper which feeds a rotary riddle and which in turn empties into the bottom of a bucket elevator. The elevator raises the sand to a reservoir on the roof, whence it is distributed over the foundry by means of an electric monorail car, equipped with a drop-bottom box. Each floor has either one or two cylindrical containers, open at the top and bottom, which receive the sand from the cars and from which the sand is shoveled into the flask.

Central Foundry Has Great Flexibility

In designing the Central Foundry the various conveyor systems were investigated with the result that it was decided to put all operations on the ground floor and to put in no fixed sand handling equipment. The foundry is laid out in four bays, running the full length of the foundry, with a gangway for transporting cores and castings along each outside wall, and a gangway of double width between the two center bays. A double monorail track between each two bays is used for distributing the iron. This arrangement keeps the iron out of the material gangway and avoids a lot of accidents. It also gives us flexibility to such an extent that we can turn a cylinder floor over to the molding of valves almost over-night, the molding machines being the only equipment to be moved.

In order to save floor space and flask equipment the foundry is run continuously; that is, the pouring starts

at 7 o'clock and the bottom is dropped at 4:30 P. M. After giving the matter considerable thought it decided to set the molding machines in the center of the floor, instead of at the end, as is customary. The molders start on the east side of the machines and after placing about 24 molds (the number may vary according to the size of the job) they move to the west side, and while they fill up this space the molds on the east side are poured, shaken out, and the sand tempered and cut back to the machine with a sand cutter. By this method 120 to 140 molds, 24 x 36 in., of a four-cylinder block, with crank case attached, can be molded on a floor 60 x 24 ft. This same floor space will also produce 100 to 110 six-cylinder blocks, each of these floors requiring 40 flasks. For jobs like crank cases, requiring little core setting, and which are quick-cooling, a production of 200 to 220 molds requires a floor space of 960 sq. ft. We have also produced 630 12 x 18 in. snap molds on a floor space of 480 sq. ft.

With this method the molds are shaken out on the floor so the sand will form two rough heaps, which are wet down and then cut back to the machine by a sand cutter. A machine operator and one laborer, who trims the heap and clears the wheels of the sand cutter, are able to handle about 9300 cu. ft. of sand per nine hours, or all the sand required for 900 to 1000 six-cylinder molds. For the handling of flasks, molds and castings, each floor has one or two single I beam, one-ton, hand push cranes with a one ton air hoist.

Selection of the Molding and Core Machines

In selecting the molding and core machines the conditions of the patterns and the quantity of castings required are the dominant factors. For example, if I receive an order to furnish daily 200 valve castings for a gasoline motor I would make either a gated brass pattern or an aluminum match plate, and make them on a plain hand or power squeezer of any standard make, but if the order called for a production of 20,000 castings per day I would build an iron split pattern plate equipment and mount them on the two fastest jolt-squeeze-pattern draw machines on the market, and make them with two laborers. If I had 30 flywheels to make I would probably make them on a plain jolt or hand roll-over machine, but if the order called for a daily production of 250 to 350, I would make them on two jolt-squeeze-stripping machines.

The combination jolt-squeeze-pattern draw machine has the greatest speed and requires the least skill on the part of the operator. For heavy drags the jolt-roll-over machine is the most economical; the finished drag only needs to be set on the floor. Since by this method no bars are required in the drag flask, the shaking out is considerably more simple.

While there are some jobs in the core room which adapt themselves to combination power machines, the plain hand roll-over-pattern draw type has to be accepted as standard. There are great possibilities for the core-blowing machines, but this type would naturally be confined to the production and specialty shop.

In equipping a plant with molding and core machines the proposition should be viewed from every angle and the selection should be confined to as few models as possible. If it were possible to do all the molding on one model it would be a great advantage. A complete stock of repair parts could be carried to an extent that would be prohibitive were many different makes in use. All pattern plates and mountings could be made and drilled interchangeably, so that any one machine would take the pattern equipment of any other machine. It would allow the changing of men from one floor to another without lowering their efficiency, which cannot be avoided if the machines are of different makes.

Making Heavy Work Light for Core Girls

When we started the Central Foundry there was a great scarcity of men and we decided to equip our core room so that 75 per cent of the operations could be done by girls. We selected a roll-over-draw machine of a balanced type which enables a girl to handle core boxes that weigh over 50 lb. when empty; and when mounted

on the machine, filled with sand and the coreplate clamped on, about 75 lb. The heaviest part of the operation is the handling of the core after it is made, the core and plate weighing about 30 lb. The rolling of the machine, clamping and drawing requires very little effort. We were not only able to obtain the necessary labor by this arrangement, but we increased our production from a given core-box from 25 to 75 per cent, and our core-making cost was reduced as much as 50 per cent under competitors, on jobs which paid the girls \$5.50 to \$6 per day.

Beats Competitors With a Light Hoist

A light air hoist may be a great aid to production, for example: On a certain core requiring a heavy iron box with all four sides loose, our competitors are making from 90 to 100 cores per day with two core makers. Being unable to find a machine on the market that would handle this job we installed a one-half ton hoist between each two core boxes; put trunions on the boxes, also angle iron guides to facilitate the drawing of the sides, and put a laborer on each core box and one helper between each two core makers to operate the hoist and carry the cores away. In this way we are getting from 120 to 140 cores from each box at about one half the cost of our competitors.

On the assembling operations gravity conveyors are used for cores which are beyond the weight allowed for girls. In order to furnish the foundry with uniformly accurate cores without resorting to skilled mechanics, the joints of the split cores, as well as the barrel openings of the jacket cores, are ground to size on especially designed machines.

Flask Equipment Is Often Overlooked

When we discuss modern foundry equipment we usually overlook one important item, the flask equipment. Many a good pattern and machine equipment has been condemned because the flask equipment did not receive the required attention when the equipment was selected. While the flask material is less important than the design, it will always be found on careful analysis that one certain material is better than another for the particular job on hand. We can only get the maximum service of a modern machine equipment when the design and construction of the flask is equally as modern. By studying the peculiarities of machine-rammed molds and then designing our flasks accordingly we have been able to completely eliminate all gaggers from all our production work. To show you how far this can be carried I will give you an actual example. We received a job, patterns, flasks and machines, which had been running at a competing foundry for about two years, and is generally known as a bad job. The flasks were good cast iron flasks with machined joints and the customary number of bars. It required 78 gaggers and 42 twenty-penny spikes for each mold, and since the type of labor we were forced to employ would not stay on the job long enough to learn to set these gaggers we designed a new flask, with the result that we completely eliminated all gaggers and reduced the number of spikes and nails to eight, for both cope and drag, and were also able to discontinue the tucking of the bars. In this way a half intelligent laborer, who can operate the machine and shovel sand, can give us a perfect mold, with the result that what is considered a bad proposition is really a good job, with a loss of under 10 per cent, instead of the previous 40 to 60 per cent. This is also the only job on which we are using nails, although our work is all of more or less intricate and irregular shape and our sand has to be kept fairly weak in order to run our thin section work.

Electric and Gasoline Tractors Most Flexible

There is a great variety of equipment for handling material around a plant, such as cores, sand, castings, refuse, etc. The conveyance may consist of a wheelbarrow, a two- or four-wheeled hand truck, a monorail car, with or without electric drive, a gravity or mechanical conveyor, or an electric or gasoline tractor. Where space permits it and where the size of the plant warrants it the electric lift truck and electric and gasoline

tractor are the most flexible. If this method is adopted, a sufficient number of trucks and racks should be secured so that the tractor or lift truck can take a full load every round trip, collecting loaded trucks and returning empty ones to the floors.

Ordinarily all cleaning operations are placed under one roof and in one room, known as the cleaning room. Even under good management the old time cleaning room has been a dusty and somewhat disagreeable place because the dust and smoke resulting from the knocking out of cores and similar operations contaminated the whole department. To avoid this condition at the Central Foundry we segregated the knocking out and sand blasting from the rest of the cleaning operations, locating these operations in a building between the foundry and the cleaning room, with the result that the cleaning room is as free from dust and dirt as our pattern shop. The refuse sand from this department drops through gratings upon a belt conveyor underneath the floor. The belt raises the sand on an incline to a magnetic separator which picks out all the iron and dumps the sand into dump cars. By passing all foundry and cleaning room sweepings over this separator we lose very little iron.

Much Improvement in Sand Blasting Operations

In the cleaning department equipment the sand blast and exhaust systems have received the most attention and have undergone considerable improvement in the last few years. Lift trucks, tractors, gravity conveyors, chipping stands that permit the chipper to turn his work and hold his job at any angle without setting down his air hammer, are great aids in reducing the cleaning cost. Where water-testing has to be done to any great extent, mechanical testing machines should replace the old expansion plug method. With one of these home made air operated machines it is possible to test 60 cylinder blocks per hr. While at this speed the casting is only under 90 to 100 lb. pressure for 15 to 20 sec., we have found this adequate on all our cylinders, cylinder heads and manifolds.

While we are always interested in new equipment used directly in the manufacturing of castings we are quite apt to overlook the importance of modern sanitary equipment. First aid departments, modern toilet facilities, washrooms, shower baths, and locker rooms, which give the men who take some pride in their appearance a chance to clean up after a day's work, have become a necessary part of the modern foundry, and are a good investment.

Length of Day in Steel Industry

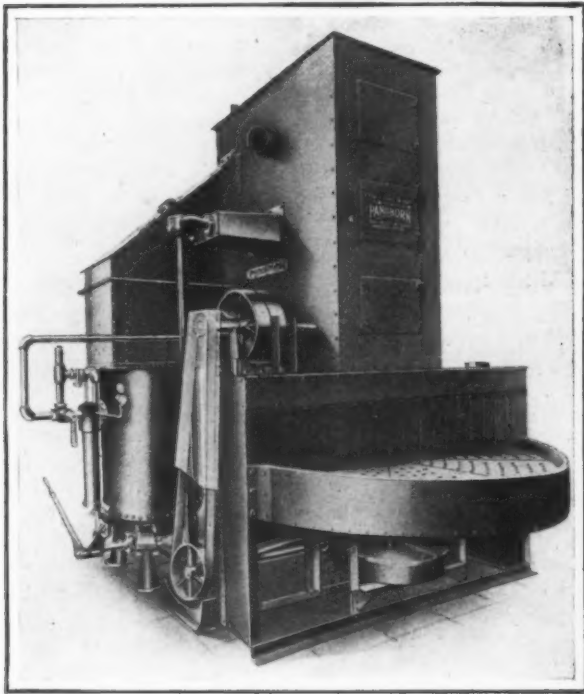
At a joint meeting of the Taylor Society, the metropolitan and the management sections of the American Society of Mechanical Engineers and of the New York section of the American Institute of Electrical Engineers, Friday evening, Dec. 3, "The Long Day in the Steel Industry" will be the topic of discussion. Fred J. Miller, president American Society of Mechanical Engineers, will preside. Horace B. Drury, formerly with the industrial relations division United States Shipping Board and of economics department, Ohio State University, is scheduled to speak on "The Three-Shift System in the Steel Industry."

Mr. Drury's paper will be based on information which he has collected during recent months when he visited a number of steel plants in the United States and gathered technical data on operation and figures showing results obtained. The general discussion will be led by Robert B. Wolf, consulting engineer, New York.

Repairing and altering of Japanese-built ships for the Government since the first of the year has been extremely helpful in keeping Seattle shipyards busy. The aggregate of Government money expended for this purpose will be more than \$1,720,000 when the last of these ships has been changed from a coal to an oil burner. Twenty-five ships have been handled in Seattle plants, the individual amounts ranging from \$34,134 to \$138,220 for repair work. The vessels were built in Japan under war period contracts from the Shipping Board.

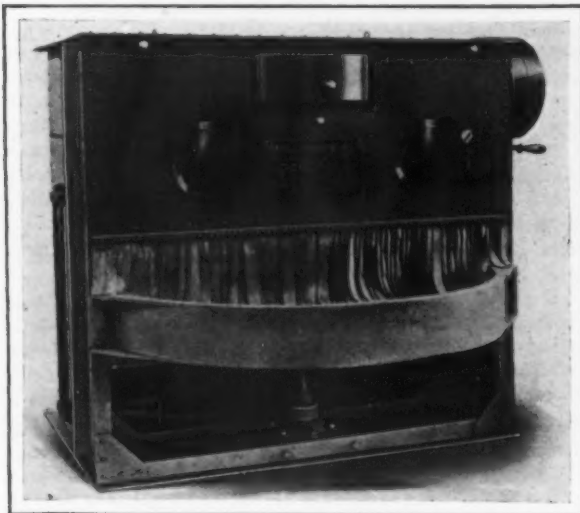
Rotary Table Sand Blast Machines

Recent sand-blast machines of the rotary table type developed by the Pangborn Corporation, Hagerstown, Md., employing three different systems of blasting action are shown in the accompanying illustrations. For work of larger character and most difficult to clean, the direct pressure system is used with the blasting action supplied by a direct pressure hose blast, and equipped with elevator and separator using both mechanical and exhaust means for reclamation and separation of the abrasive for reuse. The reclaimed



Sand Blast Employing Direct Pressure System for Work of Large Character and Difficult to Clean. Oscillating nozzles cover the entire surface of the blasting zone

abrasive is accumulated in storage bins from which the hose blast is instantly refilled through a quick acting valve that makes the operation practically continuous. This machine is made in two sizes, with table 70 in. and 90 in. in diameter with clearance of 15 in. between the table top and nozzles. Oscillating nozzles



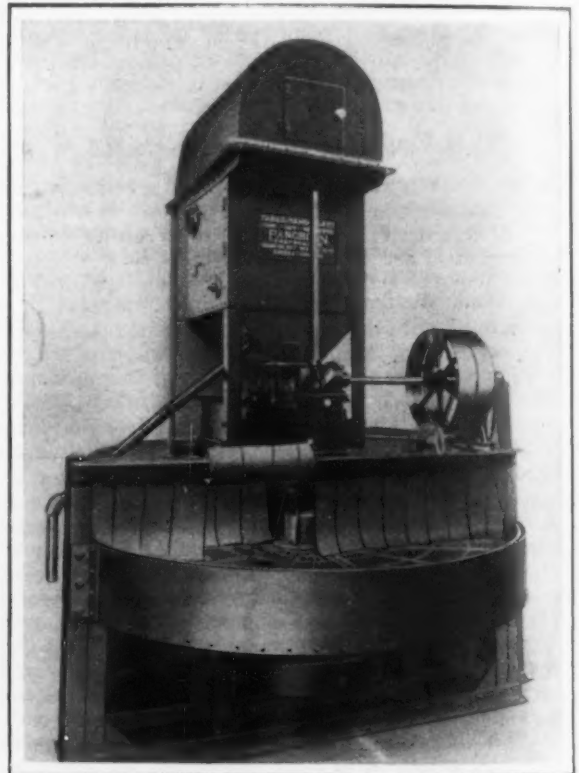
Gravity Feed Type of Sand Blast for Work Moderately Difficult to Clean or Where the Intensive Action of the Direct Pressure Is Unnecessary

cover the entire surface of the blasting zone which is entirely inclosed.

For work less difficult to clean or where the intensive action of the direct pressure is unnecessary the gravity feed type is equally efficient and permits of an

entirely self contained machine. Mechanical and exhaust action is used for reclamation and handling of the abrasive which is fed by gravity in a continuous cycle to the nozzles, where the full force of the air is exerted to the propulsion of the abrasive. This machine though made in but one size with table diameter of 84 in. has an adjustment of the nozzle arms that permits a clearance of 10 in. or 15 in. between the table top and nozzles, making it applicable to the widest range of work. Like the direct pressure the blasting action is entirely confined and movement of the nozzles covers every portion of the work within the closed zone.

For the cleaning of lighter work and requirements of refinishing, etc., the self contained suction feed type provides a small compact machine. The used abrasive is reclaimed through screens and the handling is without elevator use. The cleaned abrasive is carried continuously by suction or syphon to the nozzles. The table diameter is 70 in. with clearance of 12 in. between the nozzles and table top allowing for reasonably large work or a large quantity of small pieces. Like the other models the blasting action is entirely confined and the nozzle movement covers the full area of the blasting chamber. A smaller size of this type of Pangborn machine was described in THE IRON AGE, issue Sept. 11, 1919. This sand blast has a 42 in. diameter table with one nozzle with vertical adjustment al-



For Cleaning Lighter Work and Refinishing, the Suction Feed Type Sand Blast Provides a Small Compact Machine

lowing any distance from 5 in. to 12 in. between the table top and the nozzles.

Prominent men of Hancock, Md., have organized the Hancock Steel Co. with \$500,000 capital, and plans are under way for the establishment of a plant at Brosius, Morgan county, W. Va., which will employ about 500 workers. Offices have been established in the First National Bank Building, Hancock. The officers elected are J. Frank Fields, president; W. Riley Daniels, vice-president; Roy N. Daniels, secretary and treasurer; F. Vernon Aler, general counsel.

The National Implement and Vehicle Association will hold its next annual convention at Chicago on Oct. 12, 13 and 14, 1921. Chicago was chosen to insure a maximum attendance.

Wheel Pressures and Steel Rail Failures

American Wheel Loads Heaviest in the World—"Snow-Burnt" Rails—Heat Treatment as a Remedy

WASHINGTON, Nov. 16.—"An acute stage has apparently been reached in the race between steels in their ability to endure intense impinging pressures and the loads which are concentrated upon them by the wheels of the equipment," declared the report of the Committee on Safety of Railroad Operation to the convention of the National Association of Railway and Utilities Commissioners here last week. The document declared that rails are the "prime essential factors" of railroading and that more trouble attaches to them than to any other class of materials in important uses."

The report is of particular significance because the committee which made it was headed by Interstate Commerce Commissioner McChord. It reviewed the various rail troubles which have been investigated by the railroads, the steel mills and the Interstate Commerce Commission, and laid heavy stress upon the importance of making rails that will stand the terrific strains of modern loads and speeds. The document is of interest to the entire steel industry because of its attention to fundamental questions of heat treatment and chemical metallurgy.

"In respect to safety," said the report, "rails are exposed to destructive forces. The best results which can be expected are reached when the rails display maximum durability against wear, retaining at the same time a suitable margin in strength above their working loads. Rails in general possess a satisfactory margin in strength, or sufficient factor of safety, when first laid on the track. But the effect of repeated loads is such that the original condition does not remain a permanent factor.

"It is obvious that increased durability and safety in rails must be attained in one or both of two ways, either the physical properties of the steel must be raised, or the working stresses lowered. Two distinct propositions are presented with one of which the metallurgist or steelmaker has to deal; the other comes within the province of the designer of motive power and rolling stock, who is responsible for the wheel pressures used. The engineer of maintenance of way is in the unenviable position of making the best of the situation.

"American practice appears to have outrun the world in the use of high wheel loads, the consequences of which are believed to be in evidence in certain types of rail failures. Loads have been steadily increased until there are examples of over 17 tons being carried on a wheel. Adverse comments by engineers abroad upon the manner in which rails are used in the United States do not appear to be without foundation.

Seams in Rails

"In quest of rails of greater serviceability, the problem of structural soundness of the steel comes into view. It is held by steel makers that steel in general is seamy. However, since the seamy lines are oriented parallel to the direction of rolling, and the microstructure of hot rolled shapes does not show the direction of such working, seaminess appears attributable to foreign inclusions which may or may not pertain to the reactions which take place in the manufacture of the steel. Seaminess plays an important part in many rail failures, the elimination of which, or partial success in their avoidance should reduce the number of failures. It is a disquieting feature, nevertheless, that base fractures have resulted from very slight surface defects, so slight as to raise the doubt whether their

avoidance is a practical matter. The detection of surface seams is attended with difficulty in the inspection of rails. Mill scale forms unbroken over the seams, effectually screening them. They may be brought into view by removal of the scale, by pickling a short section of the rail in hot acid. The facility with which this examination can be made at the rail mill suggests its adoption as a means of preventing an output of rails in bad order, such as have found their way into the tracks only to be removed at an early date.

Transverse Fissures

"Transverse fissures constitute a type which is common in some parts of the United States, not known to have been displayed in other parts, and practically unknown in Great Britain. This type was first brought into prominent notice in the report of the Interstate Commerce Commission, upon the Lehigh Valley derailment at Manchester, N. Y., published about nine years ago, since which time rail failures due to transverse fissures have been matters of deep solicitude.

"From all that has been ascertained upon the subject, it appears that transverse fissures develop in rails which are free from known defects, either of composition or structure. An explanation for their interior origin was offered when they were first described in the accident report previously referred to, ascribing it to the effect of wheel pressures introducing internal strains of compression next the running surface of the head. Metal in the interior of the head is thus put into a state of tension, along those elements where transverse fissures have their origins. Repeated bending stresses together with the wedge action of the surface metal constitute the components which ultimately cause rupture.

"We are told, as the case now stands there is no known remedy for the prevention of transverse fissures, and if perchance there is one lurking undiscovered in the field of metallurgy it has escaped very diligent search. Concerted action in gathering information from all available sources seems a promising method of advancing knowledge upon this dangerous type of rail failure, as a forewarning of the approach of danger.

Wheel-Burnt Rails

"There is another prolific source of injury to rails which has attracted little attention considering its general prevalence; that is, wheel-burnt rails, so called. The slipping of wheels causes abrasion of the metal at the running surface of the rail head, attended commonly with the generation of intense heat by the frictional resistance involved. The term 'snow-burnt' is employed in some localities, having the same meaning as wheel-burnt, due to the fact that slipping of the wheels occurs during attacks on snow-drifts.

"The heat generated on these occasions exerts a pronounced effect on the metal along the top of the rail. A thin layer of metal raised to a scintillating temperature, rapidly cooled by conductivity, renders the steel excessively hard. Less rapid cooling anneals the steel. Deep abrasion of the surface affords opportunity for the inception of a line of rupture. The large number of wheel-burnt rails and the small number of accidents which result from them indicate that ordinary injuries are not serious, but none can be regarded with indifference. This branch of the rail question is far more complicated than is realized. A careful study is in progress upon this subject by the Bureau of Safety of the Interstate Commerce Commission, in connection with the

investigation of accidents which have resulted from wheel-burning.

Quality of Rails Now Made

"Since the cessation of hostilities abroad and the resumption of rail production by the steel mills there has been criticism on the part of some roads that the quality of rails now being furnished is below the pre-war standard. Inquiry into the specific causes of these criticisms leads to the inference that they have arisen from the rails furnished being softer than usual. Rail makers generally prefer to work closer to the lower carbon limit than toward the upper limit of the specification, believing that in so doing safer rails are produced. A difference of less than two-tenths of one per cent of carbon in the steel represents the difference between a hard and a soft rail; a reduction in the amount of combined carbon of less than one-five-hundredth part of the weight of the steel furnishes a rail which flows under present wheel loads.

Most Troubles Center in Rails

"One feature stands out prominently in discussion of the rail problems, that is, more trouble appears to attach to rails than to any other class of materials in important uses. For this state of affairs responsibility largely rests upon the wheel pressures employed, since they constitute the main factors of the case. An acute stage has apparently been reached in the race between steels in their ability to endure intense impinging pressures and the loads which are concentrated upon them by the wheels of the equipment. There has been for years a steady increase in the weight of rolling stock of all kinds, which means a closer and closer approach to the limiting stresses which steels are capable of

enduring. Revisions of specifications go on, but practically all grades of steel have been tried and no antidote to high wheel pressure has been found.

Heat Treatment as a Remedy

"Some steel makers are of opinion that some form of heat treatment of metal must be sparingly applied. Increased wear has been shown in recent experience of this kind where a medium hard heat-treated steel displayed the resistance of a chemically harder grade of metal. The range in the effect of heat treatment, quenching from a rolling temperature, extends from a slight hardening of the metal to that of actual rupture, depending upon the rate of quenching employed. Certain physical properties accompany each given chemical composition and of this we are well assured. The safety or danger of heated and quenched material, however, depends upon the treatment of individual members in which final evidence does not necessarily remain. The dangers which attend methods of imparting high initial properties to rails, irrespective of chemical composition, are too conspicuous to give encouragement to their adoption in the present state of the art.

"Regarding the subject as still an open one and susceptible of improvement, the compilation of data from representative roads embracing the influence of diverse conditions, climatic and operative, experienced in different States of the Union, seems a promising method of reaching practical results, which it may be remarked has been inaugurated as a necessary adjunct to, and aid in the performance of its functions by the Bureau of Safety, that branch of the Interstate Commerce Commission under which investigations of accidents are conducted."—O. F. S.

Sheet Metal Products Manufacturers at Chicago

At the tenth annual convention of the National Association of Sheet Metal Products Manufacturers to be held in Chicago on Dec. 6 and 7, headquarters will be at the Hotel La Salle. The program is in tentative form.

Monday afternoon V. Frank Banta, president V. Frank Banta, Inc., Chicago, will talk on "Factory Costs." Mr. Banta is secretary of the Chicago Sales Managers' Association and holds membership in several industrial and engineering societies; he is an experienced accountant and during the war did special accounting work for the Government. C. L. Lingo, Inland Steel Co., Chicago, will speak on matters concerning traffic and transportation. E. W. McCullough, manager of the fabricated production department, Chamber of Commerce, Washington, D. C., will talk on "Standardization." He is thoroughly conversant with the necessity for standardization of factory products and in a position to outline what has been accomplished by other associations as well as make recommendations about what should be done.

Tuesday morning, following the election of new officers and the report of some committees, the convention will be addressed by John Hansel, A. W. Ayer & Son Advertising Agency. Tuesday noon the national association luncheon will be held at the hotel. Not less than 150 delegates are expected.

Drop in Fabricated Steel Business

The October tonnage of bridge and building steel work put under contract is estimated at 45,600 tons, compared with 77,400 tons for September. The records of the Bridge Builders and Structural Society, from reports collected by George E. Gifford, its secretary, show that 25½ per cent of the capacity of the bridge and structural shops of the country was put under contract in October. This is the smallest amount since April, 1919, when the country was beginning to recover from the stagnation of business following the signing of the armistice. The monthly average for the first quarter of 1919 was 25,200 tons, or considerably below the October volume of business.

For the ten months of this year the total fabricated

steel business done was about 1,065,000 tons, or a monthly rate that is substantially the average which has obtained in the industry since 1911 and which of course includes the peak years of 1915 and 1916.

American Society for Steel Treating Invited to Meet in Cincinnati

Cincinnati Chapter of the American Society for Steel Treating has invited the Board of Governors to hold the 1921 convention and exhibition in that city. The invitation was tendered to National President Colonel White and National Secretary W. H. Eisenman at a dinner at the Business Men's Club in that city on Nov. 18. Both officers expressed themselves as highly pleased with the advantages offered by Cincinnati as a convention city, and with the many evidences of support tendered by the local Chamber of Commerce and other business associations. The decision as to where the convention will be held will not be made until after the first of the year.

The dinner meeting of the Cincinnati Chapter, at which the above named officers were present as guests, was presided over by W. A. Spear, and was well attended. During the course of the evening, Colonel White gave an address on the modern tendencies in metallurgy, with special relation to heat treating of steels. The possibilities of the high-frequency induction furnace were particularly referred to, and in his opinion we are now on the verge of tremendous development in heat treating work. Colonel White by request also explained the field of the Department of Engineering of the University of Michigan.

Mr. Eisenman gave a resume of the activities of the society since its organization, and outlined the service it was rendering to its members. He also stated that new chapters were in process of formation at Madison, Wis., San Francisco, Gary, Ind., and Wilkes-Barre, Pa. He also announced that the national headquarters of the society would be permanently located in Cleveland after Nov. 20.

The Western Reserve Motor Car Co., capital \$1,500,000 is planning erection of a plant on a site of 188 acres near Leavittsburg, Trumbull county, Ohio.

Change in Attitude of Federation of Labor

Bitter Opposition to Efficiency Engineers Abandoned—Effect of Increase in Unemployment Noticeable

WASHINGTON, Nov. 23.—Governmental activities in Washington have been almost overshadowed during the last week by the radical change which has taken place in the general attitude of the American Federation of Labor. The executive council of that organization has been in session, taking stock of the industrial and political situation. Despite the optimistic talk, there is little doubt that the council found present conditions far from its liking. But apparently, also, it has made up its mind to meet the situation in a compromising mood rather than to fight tendencies which it cannot hope to conquer.

This change of attitude has been manifested in a variety of things. First came the public announcement—reported in *THE IRON AGE* a week ago—that John Fitzpatrick and William Z. Foster had been dropped from the “steel organizing committee” and that their successors would take no belligerent steps this year. With this went a general condemnation of radicals in the labor movement. While this sounded strange in the face of President Samuel Gompers’ testimony before the United States Senate’s investigating committee during the steel strike, no one seems inclined to quarrel with Mr. Gompers or his fellow councillors over their belated repudiation of radical leaders in their own ranks.

But the reorganization of the steel committee was only a prelude to further operations which might be classified by war correspondents as “strategic retreats.” Chief of these was the abandonment of the federation’s bitter opposition to “efficiency engineers” and “efficiency experts.” In the past, the union leaders have always denounced these as exploiters of labor, and have even succeeded in inducing Congress to forbid the Government departments from employing various efficiency methods in the Government shops where union men are employed. As a reason for this change of attitude, the labor leaders declared that the “efficiency engineers” now recognize the human factor in labor.

“The viewpoint of the engineers is valuable,” said Vice-President Matthew Woll of the American Federation of Labor in discussing the new attitude of his organization, “because it is the viewpoint of a man whose position is such as to enable him to see the whole broad problem involved. He is in a position to know fully the value of being able to release the creative energy of workers to bring into play their interest and intelligence.”

To make this position less opposed to former declarations of his organization, Mr. Woll added this explanation:

“Permit me to point to the original idea of those who devised the various systems of what we know as ‘efficiency work’. Their first concept was that the workmen in industry were to be measured just as steel and iron are measured. They overlooked the human factor. That idea has been largely abandoned because it was the wrong idea. There is coming to be a more general understanding of the human element, the human factor in industrial life. This takes into account that mysterious thing which gives self to men, and it doesn’t stop at the idea that men are merely the instruments through which a given amount of commodity is turned from a raw material to a finished product.”

Changed Conditions Realized

Beneath all the words, however, there seems no question that the labor leaders realize that a change has taken place in the labor situation just as it has in the general business situation. A year ago, it was a seller’s market, and the man that had goods to sell

made his own prices. There were not enough to go around and he could charge what he pleased. A year ago in the labor market, it was an employees’ market. There were not enough workers to go around, so the worker dictated his pay and his employment without reference to the value of his product. Now the situation has changed and the amount of wages has again become a question of production. Last year, the union leaders here fought vigorously against every suggestion that wages should bear some actual relation to the value of the commodity produced. Particularly at the two industrial conferences called by the President was this opposition made loudly manifest. Now the labor leaders realize that if they continue to take that stand, the workers whom they are leading will have to give way to non-union workers who do not feel called upon to defy the laws of supply and demand. That is what makes the present open shop campaign seem so formidable to the union leaders.

It would not be a great surprise in Washington if the American Federation of Labor officials should suggest that last year’s industrial conference be resumed at the point where the repudiation of the labor leaders left it a useless debating society.

Gompers’ Influence Waning

Between the open shop campaign on the one side and the unabated activities of the radical labor leaders and the I. W. W. on the other, the Gompers leaders are finding themselves at the head of a diminishing influence in the nation’s labor questions. Increased unemployment with its shifting of labor from industry to industry and from city to city has also begun to make itself felt in the labor union power. To this must be added the effect of Mr. Gompers’ failure to deliver even an appreciable fraction of the “labor vote” to the defeated party in the last election. The latter item seems to account for the fact that the two weeks of sessions of the executive council of the American Federation of Labor brought forth little in the way of legislative suggestions. Usually this session, held just before the beginning of the Congressional year, is filled with demands for new labor legislation. Except for the demand for increased restriction of immigration, little seems to be on the demand calendar of the unions. It is announced, however, that the union leaders are preparing for considerable “defensive” work, against the proposed “anti-strike” amendment to the railroad law, for instance. They will also fight to retain the present exemptions of labor unions from anti-trust prosecutions.

Effect of Reduced Hours

WASHINGTON, Nov. 23.—The annual report of the British Chief Inspector of Factories and Workshops for 1919, just issued at London, discloses the fact that along with the general adoption, without legislative compulsion, of the reduced 48-hour week, which was accomplished in most British industries during the war period, there has been a coincident decline in the rate of production.

“The average total number of hours of labor per week throughout the industries of the country as a whole amounts now to 47 or 48; in fact, in some factories, it has been reduced to 44 or less,” says the digest prepared for the American Trade Commissioner at London. “While it is difficult to make separate comparisons for the purpose of finding out the result of the shortening of the hours of labor—owing to a variety of other changes in working conditions, such as those affecting the supply of labor or of raw materials, or processes of manufacture—still it is found that in

cases where the production depends upon the speed of machinery, as in cotton or woolen spinning, the output is said to be reduced in almost exactly corresponding proportion to the reduction in hours. In other machine operations which call for a constant alertness of the operator (as in weaving) output has not suffered to this extent, and in exceptional cases not at all."

Electrical Workers Strike

The Division of Manufactures of the Cincinnati Chamber of Commerce will meet next week to discuss the present strikes in the building trades as a result of the employment of non-union electrical workers. The situation arises from a strike called by electrical workers to enforce their demands for an increase of 25c. per hour, which was refused by the employers, who attempted to employ non-union men, which resulted in all union workers being withdrawn from the jobs. The plasterers of Cincinnati are also on strike for \$1.50 an hour, an advance of \$3 per day over their present rate. The building contractors are a unit in refusing to grant the demands, and have announced that commencing Nov. 23, the pay of lathers employed by them will be reduced from \$9.50 per day to \$7.50.

In the Field of Labor

Southern Metal Trades answers to the questionnaire on the labor situation sent out by the association, Atlanta, Ga., show that there are 10 men for every nine jobs in manufacturing plants throughout the South. In only two cases did reports show a shortage of help, both requiring a few machinists. Skilled and unskilled labor is plentiful. A bulletin of the association says:

"Two gratifying features developed by the questionnaire are that employees possess a much more contented attitude toward their work, and the whole section is practically free from disturbing labor elements.

"The possibility of a decrease in the demand for labor has caused many men to feel a greater respect for their jobs and a marked tendency toward an increase in productivity is evidenced. Manufacturers express the hope that this will result in an increase of the industrial output per man so that labor cost per unit of many commodities will be substantially reduced."

The striking riveters at the Fore River Works, Quincy, Mass., Bethlehem Ship Building Corporation, Ltd., have been officially discharged and paid off.

The Champion Horseshoe Co., Pawtucket, R. I., has reduced the wages of its 100 employees 10 per cent. This step was taken in order that the organization be kept intact, rather than close the plant for an indefinite period.

Yardmen and helpers, numbering 75, employed by the Davis & Farnum Co., Waltham, Mass., foundry, are on strike because the management refused to reinstate a union man discharged because of undesirable qualifications.

Why the Interchurch World Movement Failed

PITTSBURGH, Nov. 23.—Rev. Maitland Alexander of the First Presbyterian Church, Pittsburgh, in an address before the Pittsburgh Advertising Club on "The Reasons for the Failure of the Interchurch World Movement," said that it was due first to inefficient and extravagant business methods, disregard of organization and survey costs and finally to its falling into the hands as far as certain important divisions of the movement were concerned of a radical element not in keeping with the original purpose of the movement. At the same time, he sounded a warning in this connection against the teachings of some of our leading institutions of learning along the lines of communism and said that one of the big things to be guarded against in the United States is the danger of the spreading of this movement and other branches of radical teachings.

TRADE CHANGES

At the beginning of the year 1921, the business of The Western Supply Co. will be carried on in two divisions instead of one. The handling of plumbing and heating supplies and merchandise will be conducted by Cochran-Sargeant Co., as successors to the Western Supply Co., at its present location, corner Sibley and Fifth Streets, St. Paul, Minn. J. L. Sullwold and C. A. Bettingen will hold stock in Cochran-Sargeant Co. but will have no official connection. They will continue as officers of the Western Supply Co. and will be in charge of the part of the business over which they are to retain control.

The Washington Machinery & Equipment Co., Seattle, has changed its name to the Washington Machinery & Storage Co. The change is made to emphasize its warehousing and storage facilities. Charles W. Thompson is president.

"The Chicago Pneumatic Tool Co. announces the removal of its rock drill plant from 864 East Seventy-second Street, Cleveland, to the company's Boyer pneumatic hammer plant at 1301 Second Boulevard, Detroit. The location of the company's Little Giant air drill plant at 1241 East Forty-ninth Street, Cleveland, remains unchanged.

The C. A. Roberts Co., Chicago, has leased the three-story brick building at 414 Poplar Street, Cincinnati, and it is understood will establish a warehouse for steel products. The building contains about 25,000 sq. ft. of floor space.

The Wonham, Bates & Goode Trading Corporation, 17 Battery Place, New York, has been appointed representative for the United States of Shewan, Tomes & Co., Hongkong, China.

The Morse Chain Co., Ithaca, N. Y., manufacturer of the Morse "rocker-joint" silent chain, used on automobiles for power transmission, has established a Detroit branch factory, to be devoted exclusively to the manufacture of silent chain sprockets and the Morse adjustment. The company will continue to manufacture chains and power transmission at the main plant at Ithaca. The Detroit branch will be under the general management of F. C. Thompson, with F. M. Hawley as chief engineer and C. B. Mitchell as factory manager. Sales and engineering offices are located at the Detroit plant, corner of Eighth and Abbott streets. The company now has three large construction gangs at work on two large new concrete buildings making considerable addition to the seven acres of floor space now under roof as well as another concrete stack of 185 ft. high, providing for additional power plant equipment. The company asks for catalogs on machines, tools and equipment.

Indications that employment has been well sustained in the Mahoning Valley until recently are shown by the October wage disbursement of \$8,506,775, which compares with \$8,522,166 paid to workers in September, and with \$4,965,279 distributed in October, 1919, when the steel strike was at its height. For the first ten months of 1920, the payroll of the Valley has been \$77,678,643, or at the annual rate of about \$95,000,000, which compares with an actual disbursement in 1919 of \$81,891,279 and \$84,393,688 in 1918.

The corporate name of the Dunbar Mfg. Co. was changed to Morton Mfg. Co. effective Nov. 15, with H. U. Morton, president; H. H. Schroyer, vice-president and Charles D. Morton, secretary and treasurer. The factory and general offices are situated at 5133-39 West Lake Street Chicago, and sales representatives are located in the following cities: New York, Cleveland, Detroit, Chicago, St. Louis, St. Paul, Portland, Ore., San Francisco, Sheffield, England. The company makes railroad appliances, motor car parts and miscellaneous steel products.

CHANGED CONDITIONS

Labor and Transportation Troubles in Canada Have Been Largely Overcome

TORONTO, ONT., Nov. 20.—During the past month some noteworthy changes have made their appearance in the iron and steel industry of Canada. Whereas previous to that time Canadian producers of iron and steel, in many cases, were hard hit by the shortage of fuel, raw materials and labor troubles, to-day the greater part of these have been overcome, or are gradually being straightened out and production is being carried on more smoothly than it has for several months. Labor difficulties are comparatively few and it appears that capital is again securing the upper hand, as several strikes throughout the iron and steel industries have proved more or less a failure and to-day, throughout Ontario especially, there appears to be a surplus of labor on the market. The fuel problem has also shown a decided improvement during the past few weeks. During the greater part of the summer the priority order which was the means of sending the bulk of the coal supplies to the head of the lakes, and consequently those consumers in eastern Ontario were unable to secure supplies. The priority order has been discontinued and heavy supplies of fuel are now flowing into that section of the country which was practically starving for supplies and consumers are rapidly adding to their coal supplies.

Increased Production of Pig Iron

With better conditions now prevailing the production of pig iron is being increased and consumers are having little difficulty in securing what supplies and grades they require. While dealers opened their books a couple of months ago for first half 1921 delivery, there has been no rush on the part of consumers to cover for this period and buying is more or less of a limited character. There is, however, considerable buying being done in iron for spot delivery and for delivery covering the remainder of the year, and producers are satisfied with the amount of business of this nature that is moving. Producers of pig iron are securing fuel in larger quantities than in the past and they have little cause for worry on this account for the future. They are also securing enough cars and are

giving prompt delivery of iron on contract account. During the past month the production of pig iron has been materially increased.

Decrease in Demand

There has been some falling off in the demand for iron and steel during the past few weeks and dealers are now having no difficulty in taking care of the demand. Supplies are arriving from the mills in larger quantities and dealers are again in a position to put material into stock. In most respects business is satisfactory. There is a feeling throughout the trade that the present quiet state of the iron and steel market is but a temporary one. Structural material is still in good demand. Bar iron and steel is in less demand. Reinforcing bars, steel hoops and angles are less active than they were a couple of months ago. Cold-rolled steel is holding up well and dealers are finding a brisk demand for this line, and are also having some trouble in meeting all demands, as supplies are short, and, although deliveries are coming forward with more dispatch, the demand greatly exceeds the supply. One reason for the slump in most lines of iron and steel is the high prices now prevailing in these commodities, and while there has been some talk of lower prices among the dealers, there has been no word from the mills of a cut, although it is understood that they, too, are feeling the falling off in demand, which might be materially improved if prices were somewhat lower. Toronto dealers are quoting the following prices per lb. on iron and steel: Steel bars, base, 5.75c.; common bar iron, 3/16 in. and lighter, 6.25c.; cold-rolled steel, base, 8c.; reinforcing bars, 5.75c.; steel hoops, 7.50c.; angles, 5.85c.

Sheets and Plates

Sheets and plates have also become less active in so far as the demand is concerned, but inquiries are still coming in in sufficient numbers to take care of practically all the material dealers have to dispose of. Galvanized sheets are still scarce and the demand for these greatly exceeds the supply. Black sheets, however, are more easy to secure, and, while there is still a fair amount of trading being done in these, the demand is by no means as heavy as it was a few months ago. The present Toronto dealers' prices per lb. are as follows: Black sheets, No. 28 gage, 10.50c.; galvanized, 11.70c.; 3/16-in. plate, 7c., and 1/4-in. plate, 6.50c.

Waste Material Dealers to Meet in Chicago

The regular December quarterly meetings of the National Association of Waste Material Dealers, usually held at the Hotel Astor, New York, will be held at the Hotel Sherman, Chicago, Dec. 8 and 9. The scrap iron division will meet on Wednesday evening, Dec. 8, preceded by an "information dinner," to which will be invited scrap iron concerns not yet members of the association. The association recently had 25 applications for membership, a large proportion of which were from iron and metal firms.

Steel Club's Fall Dinner

The Steel Club of Philadelphia, comprising district sales managers of steel companies, held its annual fall dinner, Thursday evening, Nov. 18, at the Bellevue-Stratford Hotel. About 175 attended, each member bringing several guests. There were no speeches, but a cabaret show followed the dinner.

Engineering Consolidation in Baltimore

Plans are being made for the affiliation of a number of engineering and similar societies of Baltimore with the Engineers' Club of the city. The combined organizations will take steps for a permanent clubhouse. The organizations which have decided to affiliate are the local branches of the American Society of Civil Engineers, American Society of Mechanical Engineers, the American Institute of Chemical Engineers, American

Chemical Society, American Institute of Architects, American Institute of Electrical Engineers, American Association of Engineers and the present Engineers' Club.

Seattle Engineers Celebrate

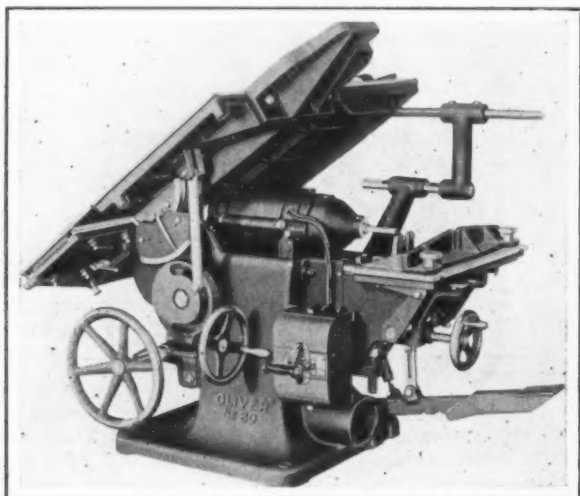
The Washington section of the American Society of Mechanical Engineers recently held a special meeting to commemorate the fortieth anniversary of the first annual meeting of the organization. About 80 members and guests participated in the dinner and celebration. Fred J. Miller, National president of the society, sent a telegram of greeting to the members, and phonographic records of speeches by Mr. Miller were heard. George F. Nicholson, chief engineer of the Port Commission, gave an illustrated talk on port handling facilities.

A. M. Castle Co., Chicago, has announced through Architect John R. Nevins, Hoge Building, Seattle, that construction work will be started this fall on the proposed steel-handling plant to be erected in Seattle. Contractors' bids will be called for in about two weeks, when plans will be completed. The first building will be of brick, 750 x 160 ft., and will be used as the main steel-handling plant. The two-story structure will house two 80-foot span electric traveling cranes. The plant will distribute the entire line of the Castle company's output of bar, plate and structural steel and heavy hardware.

Variety Saw Bench

The No. 80 variety saw bench shown in the accompanying illustration is a recent product of the Oliver Machinery Co., Grand Rapids, Mich. It will do ripping, cross-cutting and dadoing, cut a miter, quickly measure a given angle, and will cut off to length or rip to width—all without the operator's having to do any previous calculating or even referring to a rule.

Two kinds of tables may be used, plain or universal. The machine will rip to 23 in. wide and cut-off 32 in. wide by the use of universal ripping table, and will rip 27 in. wide and cut off 15 in. wide by the use of plain table. It will cut up to 3 in. thick with 14-in. saw, or 4 in. thick with 16-in. saw. It will work dados up to 4 in. wide and can carry saws to 16 in. diameter. With mortising and boring attachment, it will bore



Oliver No. 80 Variety Saw Bench with Motor Mounted Directly on the Saw Arbor in Place of the Ordinary Pulley. The table is shown tipped 45 deg. to the left.

holes 6 in. deep up to 2 in. diameter, and will mortise holes up to $\frac{3}{4}$ in. square and 4 in. deep.

The table is 36 x 44 in., tilts 45 deg. to the left, and has 4 in. vertical adjustment. The height is 32 in. at lowest position and 36 in. at highest position. The universal table has a 15-in. rolling section to the left of the saw, which rolls on ball bearing ways having vertical adjustment for alignment and for wear. The rolling table may be moved 4 in. from the saw permitting the use of dado saws and special heads. The rolling table permits accurate cross cutting, mitering and grooving.

The universal ripping fence is furnished regularly with quick adjustment of 12 in. without changing the location pins to the next set of holes. The ripping fence may be tilted to an angle of 45 deg. and is adjusted to and from the saw by micrometer adjustment. Miter cut-off gages are supplied as regular equipment, also auxiliary rods and stops to work with these gages.

The machine is either belt or motor driven. Two motor drives are applicable. Where 2 or 3-phase 60-cycle alternating current is obtainable, a compact motor-on-arbor machine can be provided by mounting the motor directly on the saw arbor in place of the ordinary pulley. The more usual motor drive consists of a 5-hp. motor mounted on a sub-base bolted securely to the frame. For belt drive, a roller bearing counter-shaft is supplied.

A Thermostatic Metal

A thermostatic metal bearing the trade name of Wilco is a bimetallic sheet or strip made by permanently welding throughout their entire length two metals having widely different co-efficients of expansion. The inert or non-expanding metal used in Wilco is invar steel. Permanently bonded to this is the active or expanding metal which is a special brass with a co-efficient of expansion approximately 25 times as great as that of the inert metal at room temperatures. Wilco is a scientific product, for use in instruments and de-

vices of precision, and is manufactured by the H. A. Wilson Co., Newark, N. J. Thermostatic metal, when subjected to a change in temperature, becomes distorted from its original shape and hence is used to perform various functions in the regulation, control and indication of temperature sensitive devices.

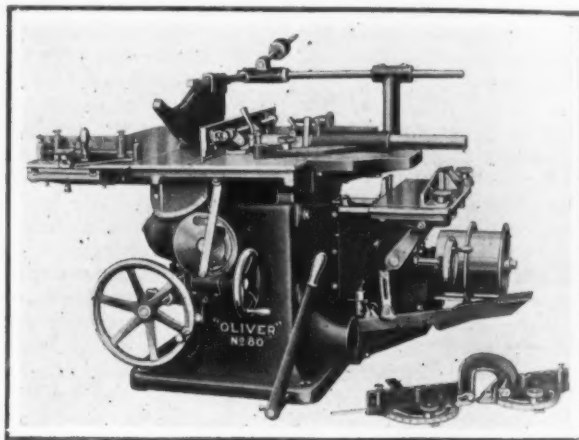
Corrosion of Steel in the Presence of Copper, Manganese and Chromium

In a paper, "The Influence of Copper, Manganese and Chromium and Some of Their Combinations in the Corrosion of Iron and Steel," by E. A. Richardson and L. T. Richardson, delivered before the general meeting of the American Electrochemical Society in Cleveland, Sept. 29 and Oct. 1 and 2, the following conclusions were reached:

It has been shown that there is a mutual action between manganese and copper in their effect upon the atmospheric corrosion of iron. Copper alone reduces the corrosion of pure iron and, to a still greater extent, the corrosion of steel. This is due to the effect of manganese, which enhances the effect of copper.

If manganese is replaced by chromium, the effect is still more pronounced.

It is shown that the red-short range in iron, due to



Front View of Oliver No. 80 Belt Driven Saw Bench, with Mortising and Boring Attachment

the presence of copper, is removed by either manganese or chromium.

It is believed that there is some relation between this red-short range and resistance to atmospheric corrosion. Based upon this, the film or inter-grain hypothesis is suggested to explain the corrosion resistance of these alloys.

Installations of Automatic Electric Heat-Treating Equipment

The Electric Furnace Co., Alliance, Ohio, is installing a completely automatic heat-treating set at the new plant of the C. H. Willys Co., Marysville, Mich. The set is designed to treat all kinds of automobile parts and consists of a 200-kw. hardening furnace, a motor operated quench, and a 200-kw. drawing furnace.

A 200-kw. Baily annealing furnace is being installed at the Springfield plant of the Ohio Steel Foundries Co., and a similar outfit but with 300-kw. electrical capacity has been ordered for export to The Oddehome Steel Corporation of Norway.

That competition among dealers in pipe in the Northwest is keen is shown by the recent bids opened by the Board of Public Works, Seattle, for contract to furnish 38-in. steel pipe for the Newhalem creek construction unit of the city's water system. Two outside firms, the Willamette Iron & Steel Works, Portland, and the Western Pipe & Steel Co., San Francisco, submitted bids, and the nine bids ranged from \$18,477.46 to \$26,991.50. The low bid was that of the Oregon Boiler Works, Seattle, at \$18,477.46. The line will be 900 ft. long and require 200,000 lb. of steel.

MUCH RESELLING

Buyers of Pig Iron and Sheets Disposing of Those Products—Active Demand for Pipe

YOUNGSTOWN, OHIO, Nov. 23—Sales department of an independent interest which handles its export trade through the Consolidated Steel Corporation, New York, states that its export business is good at this time and few cancellations are being received from its export agency. "Orders received by it from foreign buyers must be protected by a deposit to cover the invoice when shipments are made," says the statement. "The buyers must therefore take the goods for which they have contracted. We are receiving comparatively few cancellations of orders for domestic shipment, though we are receiving some suspensions. We are turning out product against orders placed some time ago which we have been unable to ship up to this time. There is little sheet buying at present for future delivery. Oil pipe trade is good and we anticipate no let-up in orders from that source for some time. There is, however, a period of lighter output to be expected in all steel products."

Increase in inquiry for sheets for the automotive industry in Detroit prefaces a more active buying movement from that source, which is particularly significant for the Valleys, inasmuch as automobile builders have been heavy consumers of sheets manufactured here. Most of the current buying now is against immediate needs and for limited tonnages. While the range on one-pass black is from 6c. to 6.50c., some business has been taken at 5.90c. Blue annealed is weak, with a minimum quotation of 4.50c., which, however, would interest makers. There has been sporadic interest in galvanized and some fair-sized tonnages have been placed, the price spread being from 7.25c. to 8c.

Basic Sold at Low Prices

Pig iron buying is still lethargic and basic is probably obtainable at \$35, Valley furnace, which is a decline from \$36 at which recent sales have been negotiated. One sale of No. 2 foundry iron at \$39, Valley, involving 500 tons, is reported to have been consummated within the week. Bessemer has been quoted at \$40.

Coke has been purchased at \$8, Connellsville ovens, though industrial consumers are disposed to hold off. Coal prices remain unchanged.

In the semi-finished market there has been limited revival of activity due to the circulation of inquiries in larger volume. One inquiry for 10,000 tons of sheet bars elicited a figure of \$53, while another for 3000 tons brought a quotation of \$55. This is from \$5 to \$10 below the recent market level. There is no selling of

standard slabs and billets, the price being \$60.

In tubular products there is an active demand for both iron and steel butt weld and lap weld pipe, with a distinct improvement in shipping conditions, due to the removal of restrictions by the Interstate Commerce Commission. Some piled tonnage has been going forward, most of it consigned to Mid-continent and South-western oil territory to be used for line-pipe purposes. Demand of jobbers for various grades of pipe to replenish depleted stocks is proving an important factor in the market and is responsible for much of the current activity, especially for oil country goods. The leading interests are well committed.

There has been further recession in demand for both grades of strip steel, with product procurable from the leading interest at 5c. for hot-rolled and 8c. for cold strip, which is down \$10 from recent quotations.

While current activity for tin plate is light, mills are working off orders placed some time ago in sufficient volume to maintain operations for a reasonable time, and the likelihood that buying will develop as soon as makers open their books to 1921 business. Orders are being taken at \$7.50 per base box for carload lots, while the price for smaller tonnages is from \$8 to \$8.50, which compares with recent quotations of \$9 to \$10.

In both the sheet and pig iron markets, resales continue to play a conspicuous part. For instance a resale transaction involving 500 tons of standard basic iron was negotiated at \$33, Valley, to a buyer in nearby territory.

There has been more plate buying in the past two weeks than is generally supposed, states the sales manager of an independent. While most of the orders have been against commitments in hand, these have been in sufficient volume to aggregate a very respectable tonnage. Current nominal quotation is 3c.

Unemployment Increases

In face of the declining market and buying lull, unemployment has sharply increased in the Mahoning and Shenango Valleys. In certain departments, one large employer recently instructed foremen and department heads to let one out of every four men go, including unskilled and semi-skilled men, and to have the same work performed by the smaller number of workers. Curtailments and actual suspensions have enhanced idleness and men who have enjoyed steady work for the past five years at high wages are now seeking employment and willing to take anything they can get. A large number of machinists and electricians have been thrown out of work for the time being, and the smaller interests have been especially active in reducing their forces.

REFRACTORIES MARKET

Demand Decreases, but Prices Have Not Yet Been Reduced

PITTSBURGH, Nov. 22.—Demands for blast furnace and steel work brick have dwindled sharply in the past few weeks in keeping with the recession in the iron and steel business. Practically all makers are in receipt of requests for suspensions of shipments against orders, such requests being particularly numerous from Ohio, where a number of the steel plants are not running more than 50 per cent of capacity and where the need of repairs to furnaces is not pressing. Most of the steel manufacturers in Ohio have stocks which would be sufficient for full operations for about two months, but on the present scale of operations their stocks promise to be ample for almost twice that period. Conditions are in practically the same shape as regards steel plant operations in the Middle West and in the East, but in Pittsburgh on account of the fact that so many of the Steel Corporation plants are located in that district, consumption of refractories is not far below normal.

All makers still are holding to the prices named around the first of October, but conditions which

caused the naming of these prices have largely disappeared in the past few weeks. Manufacturers no longer have any trouble in the matter of making shipments on account of car shortages or railroad transportation conditions, while there has been a sharp decline in the cost of fuel, and the fire clay brick manufacturers now are able to obtain plenty of workmen for their clay mines, the slump in the coal market having made it impossible for coal operators to pay fancy wages and to draw the men away from the clay mines. These developments already have had some effect in reducing the cost of making brick and in some quarters it is intimated that lower prices will be named either on or soon after Dec. 1.

We quote per 1,000 f.o.b. works:		
Fire Clay:	High Duty	Moderate Duty.
Pennsylvania	\$50.00 to \$60.00	\$45.00 to \$50.00
Ohio	47.00 to 55.00	40.00 to 45.00
Kentucky	50.00 to 55.00	45.00 to 50.00
Illinois	50.00 to 60.00	40.00 to 50.00
Missouri	60.00 to 65.00	45.00 to 55.00
Silica Brick:		
Pennsylvania		55.00 to 60.00
Chicago		65.00
Birmingham		55.00 to 60.00
Magnesite Brick:		
Standard Size, per net ton.....		110.00
Chrome Brick:		
Standard size, per net ton.....		90.00 to 100.00
Bauxite Brick:		
55 per cent per net ton.....		50.00
75 per cent per net ton.....		90.00

WELDED PIPE

National Pipe and Supplies Association Would Abolish Old Nomenclature

Officers and members of the executive committee and advisory board of the National Pipe and Supplies Association at its fall meeting held in New York on Nov. 11, adopted a resolution recommending the abolition of the term "wrought pipe" or "wrought iron pipe" as applying to steel pipe and the substitution of the specifications of the American Society for Testing Materials, which distinguish between pipe made from Bessemer or soft open hearth steel and that made from puddled iron by referring to the former as "welded steel pipe," and the latter as "welded wrought iron pipe." There has been so much confusion as to what actually constituted "wrought" pipe and also so much controversy as to whether steel and iron pipe manufacturers both were entitled to the use of the term that the association officials regarded the time as propitious for a clearing up of the matter. Hence, its recommendations, which since have had the sanction of other supply associations and have not found much, if any, opposition from the manufacturers of welded steel pipe. In one of the responses from the latter to the association, however, there was a suggestion that the change of nomenclature "was hardly a matter for jobbers to originate."

In explanation of its recommendations, the association has issued the following statement:

"When the pipe maker takes a length of steel skelp and a length of wrought iron skelp, and forms them into pipe, he performs exactly the same operation on both materials, i.e., he bends them into tubular shape and welds the edges. Quite correctly, therefore, the American Society for Testing Materials in its specifications uses the word 'welded' in conjunction with both wrought iron and steel pipe made by the processes of welding, as distinguished from pipe made by other processes, such as seamless pipe and cast pipe of iron, steel, brass or other metals.

"This is apropos the trade term 'wrought pipe' to which considerable opposition has developed on the part of architects, engineers, consumers and manufacturers of pipe who desire to eliminate the present confusing trade terms.

"Probably some 30 years ago, after the introduction of welded steel pipe, the term 'wrought pipe' or 'wrought steel pipe' was coined by steel pipe manufacturers; this term gradually came into use by dealers and jobbers; thus steel pipe would be billed and listed as wrought pipe."

"The average consumer of pipe, not acquainted with this trade name, frequently labors under the impression that it means wrought iron pipe. In fact, the names, being so much alike, have led to the term 'wrought iron pipe' by the jobbers and contractors being interpreted as meaning steel pipe, defying architects' and engineers' specifications and resulting in endless confusion. Thus contractors in specific cases, where they must have known positively that the term 'wrought iron pipe' in architects' and engineers' specifications was intended to mean wrought iron and not steel pipe, have installed steel pipe and been able to escape responsibility in lawsuits on the plea that 'wrought iron' pipe is a trade term meaning either wrought iron or steel pipe, as distinguished from cast iron pipe. Quite in keeping with this objectionable trade practice, a supply association, innocent of any unfair intent, recently published the following:

Wrought iron pipe is a term used to distinguish wrought from cast pipe. It is construed to mean merchant pipe and is generally made from soft steel. Persons desiring to obtain pipe made from puddled iron must designate *genuine wrought-iron pipe*, for which an extra charge is made.

"Subsequently, the manufacturers of wrought iron pipe, actively aided by the American Institute of Architects, took up with the supply associations the matter of clarifying these so-called trade names, suggesting instead names that would ultimately result in eliminating all confusion of puddled wrought iron with pipe made from soft steel.

"It was argued that trade names which conceal the

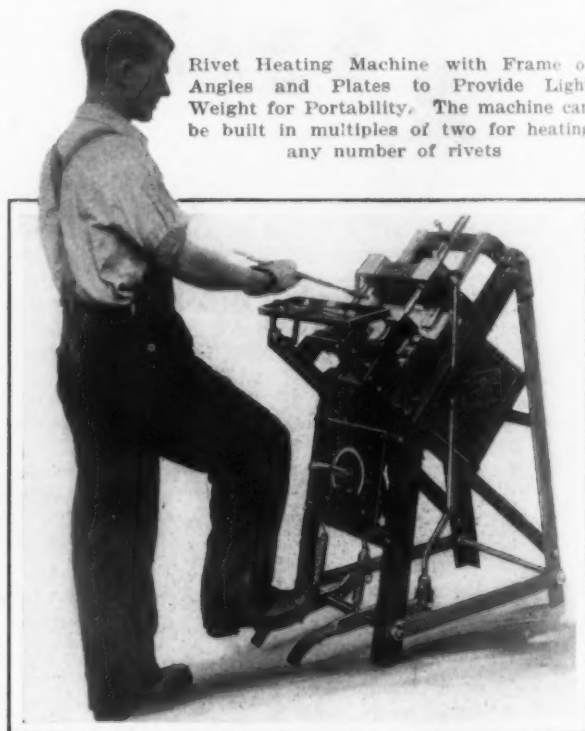
truth are misleading, even to buyers who are supposed to be well informed, and that the substitution of the word 'welded' for 'wrought' would create a common term for both kinds of pipe impossible of misinterpretation." Geo. D. McIlvaine, secretary-treasurer of the National Pipe and Supplies Association, has sent out letters announcing the adoption of the resolution, which concludes as follows:

"This step should result in the term 'welded pipe' being applied when both wrought iron and steel pipe are referred to, and that the latter two terms alone, namely 'wrought iron pipe' on the one hand and 'steel pipe' on the other hand be used and interpreted respectively to mean exactly what these terms imply. Thus, 'wrought iron pipe' should mean only pipe which is made from genuine puddled wrought iron, and 'steel pipe' will be used exclusively to designate pipe made of soft Bessemer or open hearth steel."

Electric Rivet Heating Machine

A new type of electric rivet heating machine covered by patent No. 1354859, issued Oct. 5, 1920, is being placed on the market by the Taylor Welder Co., Warren, Ohio. The machine shown in the accompanying illustration is designed to heat two rivets simultaneously, although it can be built for any number of rivets in multiples of two. In most instances, however, a machine of this type will heat rivets sufficiently fast to keep one rivet boy busy removing hot rivets and inserting cold ones. The time required for heating a rivet $\frac{3}{4}$ in. x 4 in. is given as about 30 seconds.

The frame is angles and plates to reduce weight to a minimum and to make it easy to move the machine



Rivet Heating Machine with Frame of Angles and Plates to Provide Light Weight for Portability. The machine can be built in multiples of two for heating any number of rivets

from place to place. It can be provided with a bail so that it can be picked up by a crane.

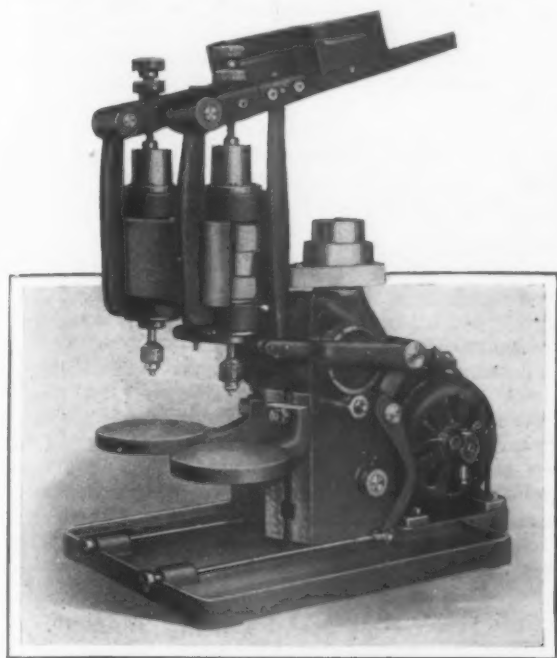
The outfit is equipped with a 15-kw. transformer, and a 5-step self contained regulator for controlling and adjusting the heat to rivets of various sizes. Air is used for cooling the transformer. The current consumption is given as approximately 18 kw.-hr. for 100 lb. of rivets heated. Operation is by foot control thus leaving the hands free. A 6 x 16-in. rivet tray is placed in a convenient position to hold a quantity of rivets to be heated. The dies are 32 in. from the floor and the extreme height is approximately 40 in.

The Standard Parts Co., Cleveland, now in the hands of receivers, has orders on its books in excess of \$16,000,000, according to information given out by John Younger, vice-president and assistant general manager.

Two-Spindle Automatic Sensitive Drilling Machine

A two-spindle automatic ball bearing sensitive drilling machine, which makes use of the principle of gravity feed and having some unusual features, is offered on the market by the Kingsbury Mfg. Co., Keene, N. H.

In making use of the principle of gravity feed, adjustable weights apply a constant uniform pressure to the drill and directly to a friction control, which holds the drill to a maximum downward speed and then raises it rapidly to the top of the stroke. When the drill



Adjustable Weights Apply a Constant Uniform Pressure to the Drills in the Kingsbury 2-Spindle Automatic Drilling Machine. Each spindle works independently of the other although driven by one fabric belt.

The plain pulley model is shown at the right

strikes the work the pressure is removed from the friction control and slipping ensues, the time taken to complete the operation depending entirely on the pressure adjustment, speed and condition of the drill, as well as the hardness of the work.

When the drill breaks through the work this same controlling means prevents the spindle from dropping with a snap. Because of the uniform pressure, which is adjustable to suit the requirements of the drill, the drill need at no time be put under excessive stress. Another feature of the machine is the ease with which blind holes may be drilled to a uniform depth. The spindle is adjusted so that the point of the drill at the bottom of the stroke is at the required depth. When the drill reaches this point it is started on its return stroke.

Built in two-spindle units, each working independently of the other although driven by one fabric belt, one operator can handle to advantage two to four spindles, according to the nature of the work, and a larger number of spindles if fixtures are arranged to feed the work automatically. Fixtures can be made for any class of work and can be operated directly by the feed lever so that ordinarily the operator has only to set the piece in position and press the spindle release rod in the base. By arranging a dial or other automatic feed for the work, the spindle release rod may be locked while thrown out and the drill operated continuously.

Some models of this new machine have a timing or efficiency device that warns the operator when the drill is getting dull. It is set for the maximum time allowable for drilling, and when the time extends beyond the limit, the operator cannot release the spindle from the front. This automatic stop is especially valuable when the machine is run full automatic, as it minimizes the attention required of the operator. The ma-

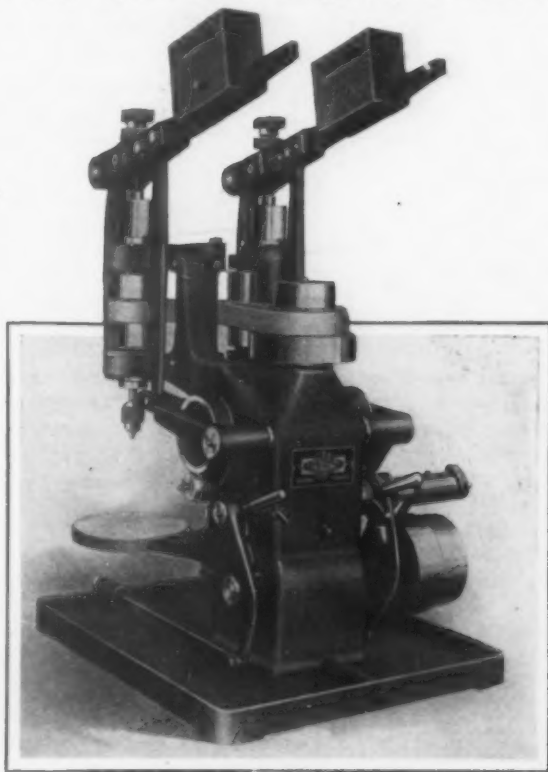
chines are so constructed that this device can be applied or removed at any time.

The diameter of the spindles is $\frac{7}{16}$ in., vertical adjustment $\frac{1}{4}$ in., and standard stroke $\frac{3}{8}$ in., which is great enough to care for variations in length of drills. Vertical adjustment is obtained through a screw at the top of the spindle, which takes care of extreme variations in length of drills and avoids the necessity of moving the tables when once set. The motion of the drill, it is explained, is steady and smooth as if it were under human control. The drill has three speeds, 1500, 2400 and 3750 r.p.m.

The machine is made in two models, plain pulley and plain motor drive, a $\frac{1}{4}$ -hp. or $\frac{1}{2}$ -hp. chain driven motor being provided, the size depending on the speed desired. The depth of the pulley driven machine is 20 in., and of the motor driven, 24 in. The width of the base of both styles is 16 in. The first model weighs 250 lb., and the motor driven, 270 lb. The distance from the spindles to the column is 6 in., and the distance between the spindles, 8 in. Jacob chucks are used as regular equipment.

Decreased Activity in Youngstown District

YOUNGSTOWN, OHIO, Nov. 23.—With suspension of Hannah furnace of the Republic Iron & Steel Co. in the Crab Creek district, Youngstown, and Clair fur-



nace operated by the Clair Furnace Co., Sharpsville, Pa., 29 of 46 stacks in the Mahoning and Shenango Valleys are active.

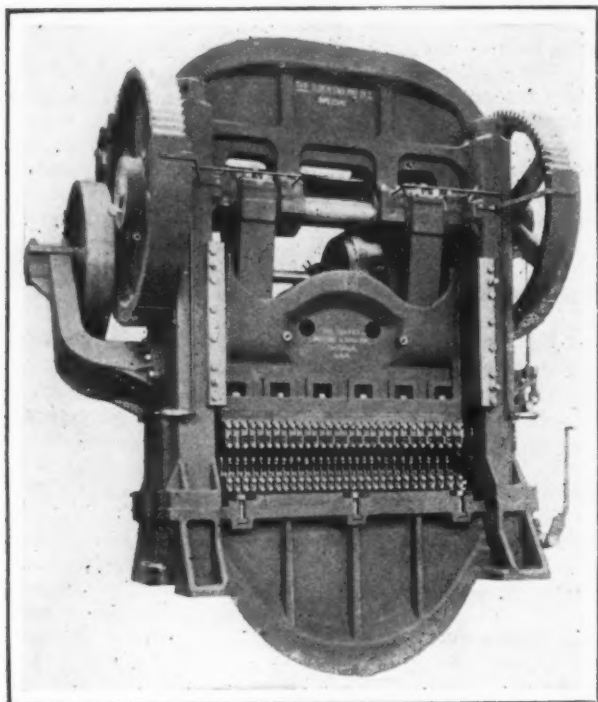
The general average of operations in the district, especially among the independent producers, is declining to below 60 per cent. Sheet mill capacity of the Falcon Steel Co. is wholly idle this week. Six of the nine sheet mills of the Sharon Steel Hoop Co. are in commission, though the open-hearth works at Lowellville is idle. Part of the open-hearth capacity of the Republic Iron & Steel Co. resumed Monday after an idleness of one week. Curtailment is reported by the Youngstown Sheet & Tube Co., which dropped to 80 per cent of normal. This company is planning to blow out "A" furnace in the East Youngstown group, as soon as repairs to No. 2 stack in the Hubbard battery are completed.

It is likely there will be further reduction in the blast furnace operations of the district within the next week or 10 days.

Carnegie Steel Co. is operating 13 of 15 open-hearth furnaces and is maintaining a fairly proportionate rate in its finishing capacity.

Large Multiple Punch Press

The accompanying illustration shows the compact design of a large multiple punch press built by the Toledo Machine & Tool Co., Toledo, Ohio. The press is of the double crank type with an eccentric shaft and twin gear drive. The connections are solid and all pressure, therefore, is through solid metal. The press is fitted with 60 independently adjustable punches and



Sixty Independently Adjusted Punches and Dies for Punching Holes at Varying Distances Between Centers Are Provided in Toledo Press, Weighing 165,000 Lb.

dies for punching holes at varying distances between the centers. The punch holders are fitted with gags so that by pulling out or pushing in the gags one or more holes may be punched or omitted as may be desired. The press has capacity for punching 15 1-in. holes through 15/16-in. steel without shear.

The press is entirely self-contained and requires no outboard bearing, thereby reducing the floor space to a minimum. It is controlled by the Toledo friction clutch with patented positive stop. This stop will automatically throw the clutch out at the top center or by changing the position of a small counterweight, the press can be run continuously or intermittently by operating the hand lever. The press is driven by a 30-hp. motor, supported on a bracket on the rear of the left hand upright. Lubrication is by centralized forced feed which permits the operator to lubricate all main bearings from the floor.

The press weighs about 165,000 lb. The width between uprights is 103 in.; area of bed, 36 x 102 in.; opening in bed, 4 x 98 in.; area of slide, 22 x 94 in.; diameter of crank pin, 13½ in.; distance bed to slide, stroke down and adjustment up, 33 in.

Hare's Motors, Inc., New York, will hereafter control the operations of the Kelly-Springfield Motor Truck Co., Springfield, Ohio, and will also sell the output of the company. Emlen H. Hare has been elected president of the Kelly company, and James L. Geddes, former president, becomes chairman of the board. It is understood that the plant of the company at Springfield, which has been closed for some weeks, will reopen shortly with all departments operating.

Small Welding Machine

A welding machine weighing 100 lb. and using electrodes from 1/16 in. to 5/32 in. has been developed by the Electric Arc Cutting & Welding Co., 152 Jelliff Avenue, Newark, N. J. The machine will operate continuously with the medium and small sizes of electrodes and intermittently on the large size. It will operate on 110 or 220 volts and is built for the frequency desired, but special machines for other voltages can be supplied. The power supply must be of at least 5 kva. To operate, two wires are hooked from the machine to the power supply, and two other wires are attached to a plugging-in board unit mounted on the machine for regulation. In order to make the machine standard, provision is made for operating on the following voltages: 90 to 130 volts, and 180 to 260 volts.

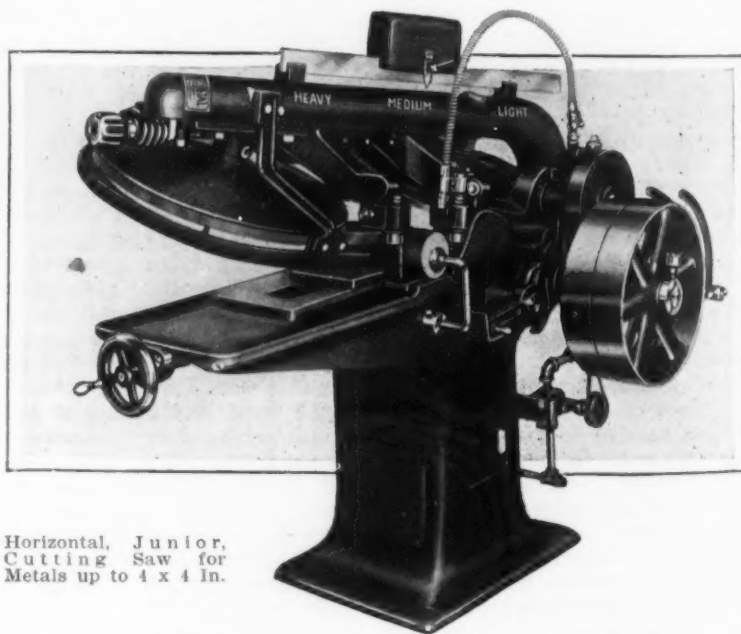
The machine is designed for light welding, such as repairs about the machine shop, automobile repair work, sheet metal work, etc. It will do heavy work, it is explained, but at a reduced rate, i. e., it is not economical for production, but is economical for emergency repairs. Spot, butt or tack welding of small thin pieces can also be accomplished with an attachment furnished.

Special Drill for Automobile Body Builders

The Black & Decker Mfg. Co., Baltimore, has designed a 5/16-in. portable electric drill especially for automobile body builders. The housing of the motor and gears is aluminum alloy to reduce weight. The motor is cooled by forced circulation of air through the motor and motor windings. It develops ¼ hp. and gives the drill a no-load speed of 1480 r.p.m. The control is by the company's standard design of pistol grip and trigger switch. The drill is equipped with 3-jaw chuck for straight shank drill bits up to 5/16 in., and runs on either alternating or direct current at 110, 220 or 32 volts.

Horizontal Metal Cutting Machine

A metal cutting machine with a capacity for cutting metals up to 4 x 4 in., is a recent product of the Metal Saw & Machine Co., Springfield, Mass. This machine is known as Horizontal Junior to distinguish it from the company's 10 x 10 in. Horizontal Napier metal cutting machine. It is equipped with Napier cutting band saws, 8 ft. 4 in. long, ¾ in. wide, and



Horizontal, Junior, Cutting Saw for Metals up to 4 x 4 in.

0.032 in. thick. The band travels 120 linear ft. per min. Patented roller guides are provided to assure straight cut and freedom from vibration. The machine is equipped with belt driven pump of gear type for use when wet cutting is desired. A hand adjustment on the supporting head regulates the proper band tension. There is adjustable gravity feed.

Exhibits Presented in Pittsburgh Basing Case

Statements in Opposition to Judge Lindabury's Argument for the Steel Corporation—Practice Declared Tantamount to Agreement of Producers of Steel

WASHINGTON, Nov. 23.—Hearings in the case involving the Pittsburgh basing system of fixing prices on rolled steel will be resumed before the Federal Trade Commission on Dec. 6. It is the expectation that the hearings will run until Dec. 9. Counsel for the United States Steel Corporation and other steel producers will have 15 hours in which to present their side of the case. Three and one-half hours has been reserved for the applicants.

Adjournment until Dec. 6 was taken at the close of hearings which continued during the past week through Wednesday. Only H. G. Pickering, counsel for the Western Association of Rolled Steel Consumers; Elliot Cheatham, counsel for the Southern Association of Rolled Steel Consumers; Attorney General Hilton of Minnesota, and others supporting the applicants' side of the case were heard during the hearings last week. Counsel for the steel producers were in attendance but reserved their statements until the later hearings.

Among the new exhibits introduced by the applicants at the hearings last week were a number prepared by H. E. White of the Minneapolis Steel & Machinery Co. Mr. White presented the following statement in explanation of an exhibit known as Exhibit No. 45½, in reply to arguments made by R. V. Lindabury, counsel for the United States Steel Corporation, at the previous hearings:

"Exhibit No. 45½ is submitted in answer to the contention contained in the answer of the United States Steel Corporation that prices 'are fixed and controlled by the law of supply and demand and are the market prices prevailing in the territory served at the time of service.' Its purpose is to indicate what the Chicago mills would naturally do in marketing their product as alleged, as distinguished from the practice indicated by exhibits Nos. 3, 4, 5, 6, 7, 8, 9, 10, 44 and 46, which is the common practice in both good and bad years.

"The contention is that the demand for steel in Chicago and in the territory west of Chicago is greater than the supply needed to meet the Western demand, and it therefore becomes necessary to procure the remaining supply needed to meet the Western demand from the Pittsburgh district. What would happen under the operation of economic law, free from artificial restraint?

"Naturally the Pittsburgh mills would charge the same price in the West that they charge their Pittsburgh customers plus the freight from Pittsburgh to destination. That being the case, it becomes possible for the Chicago mills to charge the same price. This is in accordance with the economic theory of competitive price, which is that the price will be fixed by the marginal producer, or at the point of maximum cost. Of course this is only a partial statement of the law; a complete statement of it is as follows: Competitive price is fixed at the point at which marginal cost of production coincides with marginal utility or demand.

Clever Explanation

"The explanation offered by Judge Lindabury is a clever one and if we would accept his premises, it is difficult, if not impossible, to escape his conclusions. However, if we take the trouble to examine the facts, we shall find that Judge Lindabury's argument seems plausible only so long as we take his assumed facts in regard to relative supply and demand in the Chicago district for granted.

"In fact, a minute investigation of the various ramifications of Pittsburgh plus, and particularly the practices only partially shown by exhibits Nos. 3 to 11-A, inclusive, not only destroys the strength of the argu-

ment, but shows it to be positively ridiculous. This investigation will also prove beyond the shadow of a doubt that the practice is artificial and could not exist were it not based upon a practice which is tantamount to agreement among the producers of steel.

"The exhibit supplemented hereby is a map of the United States, certain portions of which are colored yellow. It will be noted that the yellow portions include only a small portion of Wisconsin and Minnesota, most of South Dakota, about half of Colorado and New Mexico, perhaps a third of Kansas, together with very small portions of Missouri, Nebraska, Wyoming, and Utah. It is important to remember that not more than 5 per cent of the population of the United States resides in the portions of territory thus colored. It is also important to remember that less than one per cent of the manufacture of the country, involving use of steel as raw material, is carried on in this territory. Now this is the only territory in the country in which the full effect of the Pittsburgh plus prevails. In other words, this is the only territory in which the through rate from Pittsburgh to destination is equal to the sum of the local rates from Pittsburgh to Chicago and from Chicago to destination. In all of the other territory, the through rate from Pittsburgh to destination is less than the sum of the locals from Pittsburgh to Chicago and from Chicago to destination. Consequently, in all of the other territory the Chicago mills sell at a price which nets them less than the net price they obtain when they sell in the yellow colored territory. In some cases, the net price obtained by the Chicago mills is only slightly less than that obtained from the yellow colored territory. In other cases, it amounts to as much as \$9.40 a ton less than that obtained from the Chicago mills, when selling in the yellow colored territory.

Not Uniform Prices

"In other words, the steel producers are not selling to their various customers in different localities at a uniform price, but are discriminating among them, selling to some at a higher and to others at a lower net price. We should not make any objection to differences in price due to actual cost of transportation, but we are pointing out here differences different from and in excess of those dictated by actual cost of transportation. In other words, the steel producers are classifying their customers and are charging various prices. This is what is known to economists as 'class price,' or classified price. It is admitted by all economists that wholesale prices, such as these, can be classified in the manner indicated only when monopoly or monopolistic practice prevails. Such an arbitrary classification of wholesale prices is utterly impossible where competition prevails.

"Let us see what would happen if competition did prevail. Every man desires to sell his product at the highest net price he can obtain. If competition actually did obtain among the producers of steel in the Chicago district, they would compete vigorously among themselves for all of the business in the yellow colored territory. Incidentally it will be conceded that the Chicago supply is far more than sufficient to meet all of the demand in the yellow colored territory, involving, as it does, less than five per cent of the population of the country and less than one per cent of the manufacture using steel as raw material. The Chicago producers would continue to compete among themselves for the business of this yellow colored territory until they had forced the price down to the point they are obtaining in the other territory. They would continue forcing this price down until it reached approximately the lowest price they are obtaining at any of the points in the ter-

ritory outside of this yellow colored district, which they are now supplying and which they are capable of supplying. Here the price of steel would be fixed uniformly under the free play of competition. Not only would the

price in this yellow colored territory be forced down, but all other prices supplied by the Chicago mills in the territory outside of the yellow colored district be forced to this minimum."

Buyers Condemn Pittsburgh Basing Point

Take Action to Eliminate Profiteering in
Future—Believe Bribery Should Receive
Federal Action—Meeting at Detroit

THE Governing Board of the National Association of Purchasing Agents in session at Detroit last week condemned the Pittsburgh basing point as primarily incorrect and uneconomic. The resolution will be presented to the Federal Trade Commission at its hearing on this subject at Washington by a committee consisting of W. L. Chandler, president of the association, Dodge Sales & Engineering Co., Mishawaka, Wis.; L. F. Boffy, editor *Purchasing Agent*, organ of the association, and F. J. Arthurs, the Larkin Co., Buffalo.

To Prevent Profiteering

Action was also taken which this organization expects will in time eliminate opportunity for profiteering in the four basic raw materials covered at this time, iron and steel, lumber, paper, and fuel, including coal, coke, charcoal and fuel oil. A separate national council will be formed, composed of one of the leading purchasing agents from each of the 35 districts of the United States and Canada into which the membership is divided, whose duty it will be to collect and distribute to all the members dependable information and figures regarding the production, consumption and distribution of these basic materials. In this way it is expected that artificial shortages resulting in unfair advances in prices throughout the country as a whole, or in certain localities, will be made a thing of the past. The association wishes to emphasize its underlying policy which gives assurances that prices will not be compared, disclosed, or discussed. It is thought that accurate information regarding actual conditions in these industries will automatically result in fair prices to all. The association has always recognized that prices will vary with conditions, such as quantity, standing of the buyer, time of placing the order, etc., and has sought to avoid conflict and misunderstanding with sources of supply over fear of betrayal of confidence among buyers by establishing a fundamental policy not to discuss prices.

Unfair Business Methods

Brokers and middlemen who have flourished particularly during the past five years at the expense of the buyer without giving value in return, or who have flagrantly profiteered or practiced unfair methods are to receive attention through the association. A committee is gathering information on this subject which will be sent out to all members, giving a list of firms whose practices have been questionable, or who have operated without economic excuse. Firms, for instance, which bought up a quantity of steel, peddled it out from one buyer to another, selling it to each without making delivery until the highest possible price had been reached, will be listed, with the opinion attached of the buyers who have had experience with them, leaving it to the individual buyer to decide whether or not to have further dealings with such firms. Great care will be exercised to be fair, and none but notorious profiteers will be included. This will not be in the nature of a secret blacklist, but will be available to any who may desire access thereto. It is recognized that not all so-called brokers are "parasites," and that many have performed valuable services to industry by locating unused or obsolete stocks and by virtue of their superior knowledge of manufacturing conditions have been able to bring such stocks to the attention of manufacturers who were in great need of them. Only unnecessary middlemen who perform no adequate service the association will endeavor to eliminate.

The association hopes to bring the manufacturing producer and the manufacturing consumer closer together to a better mutual understanding of each other's requirements so that unnecessary manufacturing costs due to ignorance of the consumer's conditions may be eliminated.

The purchasing agents have decided that bribing and other unfair practices are widespread and vicious and that active measures are to be taken at once to prevent them. A resolution on the subject was adopted, and the president, W. L. Chandler, is now in Washington in an endeavor to get legislation started on a practical basis. The resolution recommends to the incoming Congress the immediate passing of legislation to establish commercial bribery as a Federal penal offense, and asserts that the bill should include a provision for immunity to the first informer in any specific case, to aid in the prompt conviction and punishment of offenders.

The National Association of Purchasing Agents was started in New York in 1916 by 50 buyers from all parts of the country. At the present time there are 4000 members, with 35 branches. New members are being added at the rate of 200 to 300 per week. About 75 per cent of the firms represented are in the iron and metals industry, and the rest are manufacturers of textiles, chemicals, etc., together with the larger distributors of manufacturing supplies. Retail stores or the house-furnishing or dry goods business are not included.

Elwood Sampson of Detroit, national chairman of the public relations committee, says that the association considers it dangerous to the welfare of the country for the buyers to combine to indiscriminately depress prices just as much as for the sellers to combine to artificially raise prices. The fundamental laws of supply and demand are not to be juggled with. It is the stand of the association that reliable information regarding business conditions in the hands of the buyers cannot help but work out for the general good and that this is one of the chief if not the chief object of the association. Mr. Sampson wished it made clear that the members feel in honor bound to so conduct their affairs that confidential business relations between buyer and seller will not be violated.

Operations of Ironton Plants

IRONTON, OHIO, Nov. 22.—Four blast furnaces of the 10 in the Ashland-Ironton district are at present in operation. Two of these are the Ironton and Etna stacks of the Marting Iron & Steel Co., the others being Belfont stack of the Belfont Iron Works, and Ashland Furnace of the Ashland Iron & Mining Co. The Etna stack was blown in on Tuesday, Nov. 16, and it is expected that both stacks of the Marting company will operate for some time. One stack at Ashland was blown out last week, and while down will undergo some necessary repairs. The Norton furnace at Ashland will be relined before blowing in. Very little iron is piled on the yards of the furnaces in the district, it being estimated that the total amount does not exceed 8000 tons, and much of this is off analysis iron.

After a continuous run of over two years, the plant of the Ashland Steel Co. has been closed down for some necessary repairs, and will be closed until about Dec. 1. The sheet mills of the Ashland Iron & Mining Co. are also down, but it is reported that operations will be resumed about Jan. 1.

Engineers to Help Government and Industry

Hoover Heads American Engineering Council, a Super-organization of Engineering Societies with Public Service Its Chief Aim

OF transcending national importance, at least in the belief of engineers, was the launching in Washington last week of what is known as the American Engineering Council. Outstanding in immediate interest was the acceptance of the presidency of the organization by an American engineer of international fame, Herbert Hoover. The meeting itself was devoid of stimulating inspiring episodes but instead devoted itself to practical questions of organization. It was at the earlier meeting held in Washington in the first days of June, when the movement crystallized, that ebullition and enthusiasm marked the gathering; of last week's meeting the feature was the undertone of fixedness of purpose and confidence in the outcome indicated by the active participation in the details of formation of the new body by engineers who stand in the front rank of the profession.

The object of the American Engineering Council, as has been explained at some length in these columns, is to act as the mouthpiece of engineers in the aggregate on questions of importance involving engineering. It is made up of representatives of national, state, regional and local engineering bodies, each having a number of delegates proportional to its membership and paying to the council according to its membership, \$1.50 per capita in the case of national associations and \$1 in the case of the others. It will take over the activities of the existing Engineering Council which ceases to operate Jan. 1, 1921. The full name of the new body appears to be "American Engineering Council of the Federated American Engineering Societies."

What work will be done was outlined in a long list of questions needing attention, enumerated by a committee on plan and scope. These cover in a large part subjects which have been under consideration by the Engineering Council but not all taken up for lack of funds. In addition the problem of industrial relations was put into the list by Mr. Hoover, who in the principal scheduled address of the meeting devoted himself to this question. Incidentally as one of the day's notable contributions to human relations discussions, the address is given substantially in full at the end of this account.

The working body of the council is an executive board, made up of six officers of the council and 24 representatives of the federated societies, part of them named by the national societies and part by other associations at present grouped geographically in six divisions. The executive board selects the executive secretary of the council and of course is in charge of the activities. The board met for organization on Saturday, Nov. 20. Officers had been elected on Friday and representatives had been nominated by the delegations from national and other associations, and the personnel of the executive board is as follows:

The Executive Board

President, Herbert Hoover.

Vice-presidents to serve two years: Calvert Townley and William E. Rolfe, St. Louis.

Vice-presidents to serve one year: Dexter S. Kimball, dean, Colleges of Engineering, Cornell University, Ithaca, N. Y., and J. Parke Channing, New York.

Treasurer, L. W. Wallace, director Red Cross Institute for the Blind, Baltimore.

American Institute of Mining and Metallurgical Engineers: Edwin Ludlow, New York; Arthur S. Dwight, New York, and Philip N. Moore, St. Louis.

American Society of Mechanical Engineers: L. P. Alford, New York; Edwin S. Carman, Osborn Co., Cleveland, and president-elect of the society; Prof. Arthur M. Greene, Jr., Rensselaer Polytechnic Institute, Troy, N. Y. Fred J. Miller, president of the society.

American Institute of Electrical Engineers: H. W. Buck, New York; William McClellan, Philadelphia; Prof. Charles F. Scott, Yale University; Lewis B. Stillwell, New York.

American Institute of Chemical Engineers: Harrison E. Howe, Washington.

Taylor Society, Morris L. Cooke, Philadelphia.

American Society of Agricultural Engineers, Samuel H. McCrory, Washington.

District No. 1 of local, regional and State organizations, comprising New England and New York State, with 547 members represented: W. B. Powell, Engineering Society of Buffalo, and Byron E. White, Mohawk Valley Engineers' Club, Utica, N. Y., the two sitting temporarily with one vote.

District No. 2, comprising Michigan, Wisconsin and Minnesota, with 704 members: Burritt A. Parks, Grand Rapids Engineering Society, Grand Rapids, Mich., and D. J. Sterrett, Detroit Engineering Society, Detroit, the two sitting with one vote.

District No. 3, comprising Ohio, Indiana and Illinois, with 1241 members, John F. Oberlin, Cleveland Engineering Society, Cleveland.

District No. 4, comprising New Jersey, Pennsylvania, Delaware, Maryland and District of Columbia, with 850 members: W. W. Varney, Engineers' Club of Baltimore.

District No. 5, Virginia and Southern States generally, including Texas, with 836 members: O. H. Koch, Technical Club of Dallas, Tex.

District No. 6, other states west of the Mississippi River, with 1470 members: Lloyd B. Smith, Kansas Engineering Society, Topeka.

What Numbers the Council Represents

Putting the total membership of engineering societies at 110,000, it appeared that 35 per cent of them were represented by delegates of associations ratifying the idea of the American Engineering Council, that is by delegates of charter members of the council. About 50 per cent of them, however, had representatives present, since unofficial delegates were in attendance from organizations which are still considering affiliation. Notable among these associations were the Society of Automotive Engineers, the American Society for Testing Materials and the National Fire Protection Association. Regrets were expressed that the American Society of Civil Engineers has voted not to join the federation, but a belief prevailed that before long this important national organization would also be counted in the movement. In all 23 associations are now charter members and those which have been invited have been given until July 1 to join as charter members, it being recognized that annual meetings of some societies are necessary for voting to affiliate.

The meeting was called to order Thursday morning, Nov. 18, at the new Willard Hotel, by Richard L. Humphrey, consulting engineer, Philadelphia, as chairman of the joint conference committee of the four national societies of civil, mechanical, mining and electrical engineering, which committee had brought about the federation. Mr. Humphrey, being a member of the civil engineers, was subsequently without official connection with the meeting, but with others in a like position was granted the privilege of the floor. He pointed out that the committee since the June meeting had issued 17 bulletins of information, aggregating 110 pages. The subcommittee on procedure held weekly meetings, 25 in all, in order to care for the business of the organization.

"You are embarking," he said, "on a broad field of activity under the critical but hopeful eyes of the entire engineering and allied technical professions." There has been a great fear in some of the societies invited to membership that this organization will become a political machine and will indulge in lobbying and other pernicious practices in the promotion of causes favoring special interests and not for the general good of the profession. "This is not one of the matters on which there has been a division of opinion."

Edwin S. Carman, who as noted above will be president next year of the American Society of Mechanical

Engineers, was elected temporary chairman. In nominating him, Calvert Townley pointed out his society was the first to indicate a willingness to enter the federation and would be its largest contributor. William E. Rolfe, St. Louis, was elected temporary secretary.

Much of the time was spent in adopting the constitution and by-laws, which were given only minor changes from those drawn up at the former conference, and in discussing the place of headquarters, the burden of the discussion being that Washington was the most likely place and New York the least. It was decided to fill only 20 of the 24 places on the executive board, in addition to the six officers, leaving the four for representatives of national societies which may come in under the extension of the date for affiliating as charter members.

A number of more or less informal addresses were made as indicating avenues of investigation for crystallizing national thought to be given expression by the American Engineering Council. Among these may be mentioned a review of the work of Engineering Council by its chairman, J. Parke Channing; a report on the work of the Engineering Societies Service Bureau, which has charge of an engineering employment office to be conducted hereafter by the new council; a highly informing talk by Howard E. Coffin, Detroit, covering the delays in making war material partly through the lack of contacts of the American business man with Government agencies; a discussion of the labor problem by L. W. Wallace, who is, incidentally, president of the Society of Industrial Engineers, one of the members of the federation, and an outline of the economic waste in the way our highways are used and abused, by Lewis B. Stillwell, New York.

Achievements of Existing Engineering Council

The report of the employment bureau, compiled by Calvin W. Rice, showed that in nine months of this year 1733 men registered; 432, of which 364 were members, were placed, 362 placed were not registered; 20,316 pieces of mail were sent out; 26,058 applications were forwarded and the expenses were \$9,132.39, of which \$7,666.83 went for salaries.

Mr. Channing described briefly the beginnings of the Engineering Council, instituted a little over four years ago and presented a short résumé of some of its accomplishments, which have already been told in these columns.

The American Engineering Council, he maintained, will be able to make recommendations on State and local questions through local societies which are members of the body, by giving them information and instructing them on broad principles. "You must be careful and not permit yourself to be used for movements which however good in themselves are not especially under the purview of engineers."

What New Council May Consider

Stated generally, the plan and scope of the organization, as outlined by a committee headed by L. C. Nordmeyer, St. Louis, lies in the contact with governmental legislation, national, State and local, rendering assistance in an advisory capacity, to the end that sound engineering principles may be adhered to. Assistance and advice to public bodies and officials on matters of a general engineering character and the suggestion or approval of competent engineering talent for a particular public service also form an important object, the committee report went on to say. The method of procedure of the original Engineering Council, whereby various subjects were handled through standing or

special committees whose membership was composed of men best qualified to deal with specific subjects, regardless of whether they were members of the council or not, was indorsed.

Among some of the topics which have heretofore engaged the attention of the council and which illustrate the kind of activities in which this organization may well engage are:

National department of public works.
Engineers' service bureau.
Classification and compensation of engineers.
Uniform licensing and registration laws.
State organizations of local affiliations.
Maintenance of co-operative attitude toward other national organizations, both professional and commercial.
Technical education.
Conservation of natural resources, such as water, coal, oil, etc.
Transportation in its various forms, particularly highways.
Advice with and assistance to regional, State and local organizations upon their request.
National bureau of economic research.
Patents.
National board of jurisdictional awards.
International affiliation of engineers.
Russian-American engineers' committee.

The list of suggested activities was offered as illustrative only. Every care should be exercised, the committee emphasized, "to avoid any action partaking of political bias or partisanship and to keep the activities and pronouncements of the Federated American Engineering Societies within the pale of sound engineering, good judgment and upon the broad basis of a real and mutual co-operation."

Philip N. Moore called attention to the omission of the matter of establishing a governmental department of public works, and Ira Woolson suggested the addition to the program of conservation in relation to public fire protection. President Hoover held, when some emphasis was given to the importance of making arrangements for the engineering employment service, that generally questions of public service must be considered first.

In the matter of budget, Calvert Townley, as chairman of the committee on budget, gave what he called a picture of the financial affairs rather than a definite financial program. Minimum income on the basis that no other organization joined would be \$59,000 per annum. The maximum, counting on the coming in of all now designated as considering the proposal, would be \$80,000. Corresponding to these two conditions he submitted the following list of likely expenditures, the minimum being scaled down as far as possible for respectable functioning and the maximum being what is necessary for working to best advantage:

Forecast of Expenditures of Council

	Minimum	Maximum
Executive offices.....	\$27,000	\$38,000
Employment service	12,000	25,000
Rent for employ. serv.....	7,500	2,500
Committees	7,500	15,000
Traveling expenses.....	7,000	10,000
Expenses of organization....	1,500	1,500
Office equipment.....	1,500	1,500
	\$56,500	\$93,500

Mr. Hoover's address, which is given below, had been asked for as a feature of the meeting to be delivered at the Friday evening session, in which the engineering societies of Washington participated. Meanwhile he had been elected president of the council at that day's morning session. In accepting the office he said he could not refuse to take any service where it is asked for his profession or his country. He had long been in favor of an organization in which the profession would have a voice in broad questions. The address is substantially in full as follows:

Hoover's Task for the Engineer in Curing Industrial Ills

ONE of the greatest of the problems before our country and, in fact, before the world is that growing out of our industrial development. The congestion of population is producing subnormal conditions of life. The vast repetitive operations are dulling the human mind. The intermittency of employment due to the bad co-ordination of industry, the great waves of unemployment in the ebb and flow of economic tides, the ever-

present industrial conflicts by strike and lockout produce infinite wastes and great suffering. The aggregation of great wealth, with its power to economic domination, presents social, economic ills which we are constantly struggling to remedy.

We have had presented to us economic social patent medicines of one kind or another, and, in fact, the great panacea of socialism is to-day in actual trial in its

various forms. In Russia the attempt has been made to apply the most extreme form of complete communism. The Russian experiment is bankrupt in production. The populations of our modern states have been built up to numbers dependent upon an intensity of production that can only be maintained by stimulation of individual effort through the impulse of self-interest, and a departure from this primary incentive to production has now been demonstrated to lead only to famine and flames and anarchy. We have even had a gigantic experiment imposed upon the United States by the war in the necessity to operate a vast merchant marine at the hands of the Government, with a result that should offer little consolation to those who advocate even the mildest application of socialism.

Improve Regulation of Capital Consolidations

We have built up our civilization, political, social and economic, on the foundation of individualism. We have found in the course of development of large industry upon this system that individual initiative can be destroyed by allowing concentration of industry and service and thus an economic domination of groups over the whole. We have therefore built up public agencies intended to preserve an equality of opportunity through control of possible economic domination. Our regulation of public utilities and of many other types of industry, aiming chiefly to prevent combination in restraint of free enterprise, is a monument to our attempts to limit this economic domination—to give a square deal. This regulation is itself also proof of the abandonment of the unrestricted capitalism of Adam Smith. While our present system of individualism under controlled capitalism may not be perfect, the alternative offers nothing that warrants its abandonment. Our thought, therefore, needs to be directed to the improvement of this structure and not to its destruction.

A profound development in our economic system apart from control of capital and service during the last score of years has been the great growth and consolidation of voluntary local and national associations. These associations represent great economic groups of common purpose and are quite apart from the great voluntary groups created solely for public service. We have the growth of great employers' associations, great farmers' associations, great merchants' associations, great labor associations—all economic groups striving by political agitation, propaganda and other measures to advance group interest. At times they come in sharp conflict with each other and often enough charge each other with crimes against public interest. And to me, one question of the successful development of our economic system rests upon whether we can turn the aspects of these great national associations toward co-ordination with each other in the solution of national economic problems, or whether they grow into groups for more violent conflict. The latter can spell breakdown to our entire national life.

Agency to Advise Other Group Associations

This engineers' association stands somewhat apart among these great economic groups, in that it has no special economic interest for its members. Its only interest in the creation of a great national association is public service, to give voice to the thought of the engineers in these questions. And if the engineers with their training in quantitative thought, with their intimate experience in industrial life, can be of service in bringing about co-operation between these great economic groups of special interests, they will have performed an extraordinary service.

We have just passed through a period of unparalleled speculation, extravagance and waste. We shall now not only reap its inevitable harvest of unemployment and readjustment, but we shall feel the real effect of four years of world destruction, and from it economic and social problems will stand out in vivid disputation. One of the greatest conflicts rumbling in the distance is that between the employer on one side and organized labor on the other. We hear a great deal from extremists on one side about the domination of organized labor. Probably the tendency to domination

exists among extremists on both sides. One of the most perplexing difficulties in all discussion and action in these problems is to eliminate this same extremist.

Waste of Intermittent Employment

It is primary to mention the three phase waste in production: First, from intermittent employment; second, from unemployment that arises in shifting industrial currents, and third, from strikes and lockouts. Beyond this elimination of waste, there is another field of progress in the adoption of measures for positive increase in production.

In the elimination of the great waste and misery of intermittent employment and unemployment, we need at once co-ordination in economic groups. For example, our engineers have pointed time and again to the bituminous coal industry, where the bad economic functioning of that industry results in an average of but 180 days' employment per annum, where a great measure of solution could be had if a basis of co-operation could be found among the coal operators, the coal miners, the railroads and the great consumers. The combined result would be a higher standard of living to the employees, a reduced risk to the operator, a fundamental expansion of economic life by cheaper fuel. With our necessary legislation against combination and the lack of any organizing force to bring about the co-operation, the industry is helpless unless we can develop some method of governmental interest, not in governmental ownership, but in stimulation to co-operation in better organization.

To help against the misery in the great field of seasonal and other unemployment, we indeed need an expansion and better organization of our local and federal labor exchanges. We have a vast amount of industry, seasonal in character, which must shift its labor complement to other industries. The individual worker is helpless to find the contacts necessary to make this shift unless the machinery for this purpose is provided for him.

Collective Bargaining

In the questions of industrial conflict resulting in lockout and strike, one mitigating measure has been agreed upon in principle by all sections of the community. That is collective bargaining, by which, wherever possible, the parties should settle their difficulties before they start a fight. It is founded not only on the sense of prevention but on the human right to consolidate the worker in a proper balanced position to uphold his rights against the consolidation of capital. This measure, advocated for long years by organized labor, was agreed to by the employers group in the First Industrial Conference. It has been supported in the platform of both political parties. The point where the universal application of collective bargaining has broken down is in the method of its execution. The conflict arises almost wholly over the question of representation and questions of enforcement. The employer in some industries denies the right of men other than his own employees to conduct the negotiations. Labor organizations demand that, as such negotiations require skill, experience and bargaining freedom, they are of more than local application and that thus they only can protect the body of workers by presenting the case on their behalf by skilled negotiators.

The Second Industrial Conference, of which I was a member, proposed a solution to this point by the provision that where there was a conflict over representation, the determination should be left to a third and independent party. It also proposed that each party should have the right to summon skill and experience to its assistance. It further proposed that where one of the parties at dispute refuses to enter upon collective bargaining, the entire question should be referred to an independent tribunal for investigation as to the right and wrong of the whole dispute—but only for investigation and report.

That conference, embracing both a great employer and a most distinguished representative of organized labor, was completely convinced that the illumination of the public mind as to the rights and wrongs of these contentions would in itself make for material progress

in their solution and that in public education and the condemnation by public opinion of wrong-doing lay the root to real progress. No group should be afraid of authoritative publicity in these matters and I believe it would greatly advance an understanding of the cause of labor. The conference did not believe that industrial contention could be cured by compulsory arbitration or any other form of governmental repression which must in the end ultimately use the jails for enforcement. The principles formulated by that conference should have your renewed consideration.

Hours of Labor

There are questions in connection with this entire problem of employer and employee relationship, both in its aspects of increased production and in its aspects of wasteful unemployment, that deserve most careful study by our engineers. There lies at the heart of all these questions the great human conception that this is a community working for the benefit of its human members, not for the benefit of its machines or to aggrandize individuals; that if we would build up character and abilities and standard of living in our people, we must have regard to their leisure for citizenship, for recreation, for family life. These considerations, together with protection against strain, must be the fundamentals of determination of hours of labor. These factors being first protected, the maximum production of the country should become the dominating purpose.

The precise hours of labor should and will vary with the varying conditions of trades and establishments, but the proper determination of hours, based upon these factors, is an immediate field demanding attention of engineers. There is no greater economic fallacy than the doctrine that the decrease of hours below these primary considerations makes for employment of greater numbers, and it is an equal certainty that the 84-hr. week of some employments transgresses these fundamentals to a point of inhumanity.

Creating Two or Three Wage Levels

There is a broad question bearing upon stimulation of self-interest and thus increase in production that revolves around the method of wage payment. I need not review to you the advantages, difficulties and weaknesses of bonus, piece work, profit or saving sharing plans, that are in use as a remedy for the deadening results of the same wage payment to good and bad skill alike. The suggestion I wish to put for your consideration is the possible use of another device in encouragement of individual interest and effort by creating two or three levels of wage in agreements for each trade, the position of each man in such scale to be based upon comparative skill and character. This plan should be developed upon the principle of extra graded compensation, for added skill and performance, above an agreed basic wage. In order to give confidence, the classification under such scales must be passed upon by representatives of the workers in each shop or department. This plan is now being successfully experimented with.

We must take account of the tendencies of our present repetitive industries to eliminate the creative instinct in its workers, to narrow their field of craftsmanship, to discard entirely the contribution in industry that could be had from their minds as well as from their hands. We cannot accomplish increased production without their stimulation. Here again we cannot make an advance unless we can secure co-operation between the employer and the employee.

There has been a great increase in shop committees as a method of organization. Where they have been elected by free and secret ballot among the workers, where they are dominated by genuine desire on both sides for mutual co-operation in the shop, they have resulted in great good. One of the most important phases of that good has been the tendency to turn the aspect of some foreman from that of slave-driving to leadership.

Organized Labor's Opposition to Shop Committees

Organized labor has opposed some forms of these committees, because of the fear that they may break down trade organization covering the area of many dif-

ferent shops. There is economic reason for this fear in certain cases, deeper than appears upon the surface. One of the greatest accomplishments of organized labor has been the protection of the workers from the unfair employer, and it is worth the employer's notice that this is at the same time the protection of the fair employer from the unfair competition of the sweat shop. Again, I believe the engineers could assist in the erection of a bridge of co-operation if organized labor, which has already made a beginning, would extend more widely its adoption of the principles of a shop committee, settling its problems of wage and conditions of labor in general agreement and applying its energies through shop committee organization to development of production as well as to the correction of incidental grievance. There would be little outcry against the closed shop if it were closed in order to secure unity of purpose in constructive increase of production by offering to the employer the full value of the worker's mind and effort as well as his hands.

Unemployment with Rapid Increase in Production

There is an immediate problem in increased production that is too often overlooked by the theorist. While it is easy to state that increased production will decrease cost and by providing a greater demand for goods secure increased consumption and ultimate greater employment, yet the early stages of this process do result in unemployment and great misery. It takes a variable period of time to create the increased area of consumption of cheapened commodities, and, in the meantime, when this is translated to the individual worker he sees his particular mate thrown out of employment. We accomplish these results over long periods of time, but if we would secure co-operation to accomplish them rapidly we must take account of the unemployment and we must say to the community that if it is to benefit by the cheapening costs and thus the increased standard of living, or alternately if the employer is to take benefits, the entire burden should not be thrust upon the individual who now alone suffers from industrial changes. Nor can this be accomplished except by co-operation between both groups. In fact the whole problem of unemployment needs earnest consideration.

Threatened Battle of Industrial Organizations

In summary, the main point that I wish to make is this: That there is a great area of common interest between the employer and the employee through the reduction of the great waste of voluntary and involuntary unemployment and in the increase of production. If we are to secure increased production and an increased standard of living, we must keep awake interest in creation, in craftsmanship, and the contribution of the worker's intelligence to management. Battle and destruction are a poor solution to these problems. The growing strength of national organizations on both sides should not and must not be contemplated as an alignment for battle. Battle quickly loses its rules of sportsmanship and adopts the rules of barbarism.

These organizations—if our society is to go forward instead of backward—should be considered as the fortunate development of influential groups through which skill and mutual consideration can be assembled for co-operation to the solution of these questions. If we could secure this co-operation throughout all our economic groups, we should have provided a new economic system, based neither on the capitalism of Adam Smith nor upon the socialism of Karl Marx. We should have provided a third alternative that preserves individual initiative, that stimulates it through protection from domination. We should have given a priceless gift to the twentieth century.

I am not one of those who anticipate the solution of these things in a day. Durable human progress has not been founded on long strides. But in your position as a party of the third part to many of these conflicting economic groups, with your lifelong training in quantitative thought, with your sole mental aspect of construction, you, the engineers, should be able to make contribution of those safe steps that make for real progress.

GERMANY ACCUSED OF DUMPING

British Feel Effect—Japanese Buying in Hands of Foreigners Who Did Not Speculate

NEW YORK, Nov. 22.—German shipyards engaged in rebuilding the merchant marine and filling foreign orders will need from 40,000 to 50,000 tons of steel a month for the next two years or more, says the Berlin representative of a large New York export house. While part of Germany's needs of this material can be satisfied from home mills, it will be necessary, unless rolling mill capacity is expanded considerably, to buy heavily abroad when the mark is at 3c. or higher. The Government does not look with favor on increased production in these materials as there would undoubtedly be a surplus over domestic consumption when the building of ships now in prospect is completed. German manufacturers now claim to be returning to a pre-war standard of quality in most products and are interesting themselves in export trade where larger profits are possible than with controlled domestic prices.

Exchange Favoring German Selling

British producers are showing some concern at the low quotations on iron and steel products from Germany, a fact repeatedly indicated in the weekly cable from London, and they are beginning to look upon this influx of cheap material, some of it direct and some of it through Belgium, as dumping. As an example of this, the head of a large London exporting and importing company dealing in iron and steel with a branch in New York, mentions German wire rods. The wire trade was fostered by Great Britain during the war and expanded greatly. Wire rods in England are now quoted at about £28 per ton. In Germany, they are quoted at 3160 marks per ton or about £158 per ton at normal exchange. However, with the mark value at only about 1d against a normal value of 1s, Germany can sell wire rods into England at about £13 per ton, which is equal to about 3160 marks in Germany. This exporter estimates that German labor through the exchange rate is only about 1/11 the cost of English labor and that Belgian labor is about 1/2 English labor and he points out that Belgium can import wire rods from Germany, draw them into wire and export the wire to England at ridiculously low prices.

Exporters to the United Kingdom note sharp competition from Belgium on some material, notably re-rolling billets, which have been quoted to British mills at as low as £14 c.i.f. port. Exporters to Italy remark that in several instances they have been able to meet German quotations easily, but trade with Holland and the Dutch colonies is being encroached upon by German competition. Much of the steel of German origin now appearing in the Dutch East Indies was purchased through buying offices in Holland.

Japanese and Other Buying

An exporter recently returned from a survey of Japan, sees no prospect of German concentration on this market for some time. German representatives who remained in Japan during the war have reopened their offices but in most cases have been recalled to Germany to study the new conditions at first hand before attempting to regain their former customers. Buying in Japan is largely in the hands of a few British and other foreign exporters and importers, who did not speculate and over-buy as was the case with many Japanese firms. From a British importer, an exporter in New York has an inquiry for about 100 tons of 2 1/2-in. bars for making chain cable.

India continues to buy fairly heavy tonnages of pipe. Some of this buying, however, is offset by cancellations. One exporter recently booked six small orders of a few hundred tons of wrought steel pipe and received cancellations on four of the orders. Much of the pipe being shipped to Indian buyers is American pipe with British threading, as American mills are not anxious to roll the heavier British specifications. The lighter American product is reported to be proving satisfactory.

Cancellations of orders at low prices in South America, Cuba and other markets are still being re-

ceived. A New York exporter summing up the export situation for the next four or five months said that about the only persons who will be busy are the lawyers and the civil courts settling questions of cancellation of orders.

Manufacturers Asked to Be Less Stringent

In a letter sent to all members, the American Exporters and Importers' Association, New York, urges exporters to request manufacturers with whom they deal to ship orders only on date agreed to in contracts and not in advance as has been attempted in many cases and to be receptive to reasonable payment dates until the present foreign trade situation is relieved.

The association points out that during and since the war manufacturers have adopted stringent rules pertaining to payments and have demanded cash against delivery of goods at ship or against shipping papers from inland points. At present American and foreign banks are declining to purchase any bills on some countries and are according but a small part of the facilities which have been customary. Unless the manufacturer adopts less stringent rules during the present situation, the association warns that shipments will be greatly curtailed and many orders canceled.

How Shippers Can Help

The railroads of the country have saved \$2,500,000 since their return to private ownership through increased efficiency in loading cars, said R. H. Aishton, president American Railroad Association, in an address to that body in Chicago on Nov. 17. That amount, he said, would have to be spent for new equipment if shippers and the roads, by adding a few tons to each carload, had not increased the effectiveness of present equipment to the equivalent of 500,000 new cars. Greater despatch in moving cars has resulted in a further increase in efficiency equal to 400,000 cars.

American Pig Iron Association

The regular monthly meeting of the American Pig Iron Association was held at Nashville, Tenn., on Nov. 18. Operating conditions and future outlook for the iron trade were discussed. The members of the association were splendidly entertained by the Napier Iron Works.

The Steel Mill & Foundry Supply Co., with general offices at 503 Market Street, San Francisco, and branch offices and yards at South San Francisco, Oakland and Los Angeles, Cal., has been organized to deal in scrap iron and steel, pig iron, coke, ferro alloys and refractories for rolling mill and foundry use. The directors are: C. P. Burgess, Pacific Coast Steel Co., San Francisco; W. L. Booth, Judson Mfg. Co., San Francisco; D. H. Botchford, Columbia Steel Co., San Francisco; Reese Llewellyn, Llewellyn Iron Works, Los Angeles, and A. C. Denman, Jr., Southern California Iron & Steel Co., Los Angeles. I. L. Ward, formerly purchasing agent of the Pacific Electric Railway Co., Pacific Fruit Express Co. and Southern Pacific Land Co., is general manager and W. A. Letcher, formerly vice-president of the Northwestern Steel & Metal Products, Inc., Seattle, Wash., is secretary and treasurer.

According to a statement issued by the Detroit offices of the Grand Trunk Railroad, \$10,000,000 will be spent for new equipment and improvements on the western lines. A number of automobile cars will be purchased, 25 new switch engines and 10 express horse cars. The company is building a Pacific type engine in its Battle Creek, Mich., shops. New shop machinery and equipment, costing \$500,000, has been purchased, and contracts have been let for 117 miles of 100-lb. rail, of which 85 per cent has been delivered.

Morris Ungar and others have incorporated the Ungar Sheet Products Co. at Youngstown, Ohio, with a capital of \$100,000, to manufacture specialty products, principally stovepipe.

DULL IN SEATTLE

Effect of Depression in Lumber and Shipbuilding Effects General Business

SEATTLE, Nov. 16.—Local conditions in the iron and steel market remain very quiet, and are likely to so continue. The great falling off in the lumber and shipbuilding trades, with the marked downward tendency in prices, is almost entirely responsible for this dull condition. Prices on the heavier forms of iron and steel are already somewhat lower, with a marked disposition on the part of buyers and consumers to place orders only for such quantities of steel as are needed for early use. There is some inquiry for cars, the Great Northern being in the market for 500 refrigerators, and the Pacific Western for 1000 steel gondolas. The Pacific Car & Foundry Co., a local interest, will be a strong contender for both of these contracts. The larger hardware jobbers are placing orders for goods very cautiously, believing that lower prices on most kinds of steel are likely.

Little Exporting

Export conditions in steel are very quiet, there being practically no inquiry from the Orient, but there is a fair amount of business coming to local export houses from the Philippine Islands. One local house states that in the last few weeks it has shipped from six to eight carloads of galvanized sheets to Manila, the prices obtained for 28 gage being from 8c. to 8.25c. at mill. The same concern has lately made direct shipments from the mills of one car of horseshoes, a car of galvanized barbed wire and a car of merchant steel bars. All this material has been shipped from Pittsburgh to New York, the freight rate being 38c. per 100 lb., while from New York to Manila the ocean rate is from \$20 to \$21 per gross ton. This house has advices that galvanized sheets at Shanghai, China, are being offered for resale at £51 sterling per gross ton and, computing the English pound at \$3.50 in American money, this price is equal to 9.90c. per lb. at Shanghai. These sheets are from Belgian mills. Very low prices are also being named at Hongkong, China, on resale American tin plate. These sales at such low prices are being made largely because the concerns owning this material are very hard up for money, and are compelled to sacrifice it in order to raise much needed funds.

The demand for plates and shapes in the Seattle district is very dull. Most of the shipyards that have almost no work in hand are offering material they have in stock at much lower prices than the eastern mills are naming. It is said that plates have been offered here on the basis of 2.65c. at mill, and shapes on the basis of 3c. at mill, Pittsburgh.

The Sound Construction & Engineering Co. of Seattle has been given a contract for the main construction work on the new 10-story steel and concrete building now being erected on Third Avenue in Seattle by the Pacific Telegraph & Telephone Co., a branch of the Bell system, at a price said to be close to \$1,000,000, the contract being exclusive of the steel work and the plumbing and heating. The total cost of the building will be nearly \$2,000,000, and this is the largest individual building enterprise now under way in Seattle.

Shipyard Will Be Sold

The Skinner & Eddy Co. shipyard No. 2 will soon be offered at public sale by the United States Shipping Board, but a proposition has been made to the board by the Pacific Steamship Co. to buy the yard if the Shipping Board will convert it into a huge shipping terminal. If the Shipping Board decides to accept the offer of the Pacific company it will mean the construction of a gigantic terminal to have three 1000-foot piers, also a large steel and concrete warehouse of 10 stories in the middle section and five stories on each side. The company would use the property as the terminal for its coastwise and overseas freight and passenger steamships, including the five large passenger liners to be turned over to it by the Shipping Board early in the new year, and to be used in the Seattle-Oriental routes.

Some noted Swedish railroad engineers were in Seattle recently to obtain information in regard to the electrification of the Chicago, Milwaukee & Puget Sound Railroad. The party went to Seattle from Deer Lodge, Mont., where it studied the eastern division of the Milwaukee electrification. It is said the Swedish parliament has voted \$25,000,000 for the electrification of railroads in that country. The party consists of A. Granholm, director-general of the Swedish Government railways; I. Ofverholm, chief electrical engineer, and A. Enstrom, director of the Swedish Scientific Engineering Institute.

M. E. Barham, Seattle, receiver of the Norway-Pacific Drydock & Construction Co., Everett, Wash., states that the building of a number of steel oil tankers may be started shortly at the Everett yards. He has a plan under way for financing the company, and states, if it goes through, its debts will be paid in full.

Handling Requests for Cancellations

A clear statement of a policy followed in the matter of handling requests for cancellation or suspension of contracts has been issued to its representatives by a manufacturing company, whose name need not be mentioned. From this has been taken the following passages as likely to help in the present period of stress:

Where we are approached by a customer with whom we have a future delivery contract in anything from the shape of a simple accepted order to the most elaborate formal agreement, and a request is made that the contract be abrogated by cancellation, our first step is to ascertain the status of the work involved. The factory's resultant report to us shows, generally speaking, the materials on hand or contracted for, those which are special to the order in question, how far processing has advanced, and indicates what disturbance would be caused by instructions to hold. If the report shows that cancellation would involve no loss other than that of anticipated profit, we have just claim for that profit, but no more. Whether or not we urge the claim depends on circumstances, but as a rule we waive it, accept cancellation and receive as offset merely the customer's appreciation of our having lent a helping hand.

If the factory's report shows that losses other than anticipated profit would ensue we determine a suitable cancellation charge and advise the customer that this will be made if cancellation is insisted upon. We also propose as an alternative, postponement of shipment schedules over the maximum period for which we feel we can afford to spread. Should the response be acceptance of the cancellation charge the episode is obviously closed, as also is the case if our postponement suggestion is acceptable.

Often, however, the cancellation charge idea is unacceptable, and the deferment one objected to on the score that the customer does not know how soon the material could be utilized. There is consequently a request that the order be held until the customer is ready for its release. Such requests cannot be complied with. If accepted they would be even worse than actual cancellation in that on the one hand the customer could without breach of faith forever postpone release instructions if so desired, whereas we would be forever pledged to be ready to proceed. In other words, it would be the least equitable of all answers.

We thus become forced to point out the meaning of the request and restate the initial offers. Rejection of these offers necessarily means fight. On the hypothesis that the purchase agreement is in proper shape to start with, and because as soon as the negotiation for cancellation opens we have taken steps to safeguard the customer's interest by incurring no further expense than is necessary to avoid damage, our hands are clean, and the outcome of the fight will be in our favor.

Two additional furnaces of the Steelton, Pa., plant of the Bethlehem Steel Co. have been blown out. Three of the six stacks of the Steelton plant are now out of blast.

Effort to Stabilize German Steel Prices

Buyers Not Convinced—More Opportunities
for German Finished Material in Outside Mar-
kets—Krupps Deny Underbidding Americans

(Special Correspondence)

BERLIN, GERMANY, Oct. 25.—The event of the past fortnight is the reduction of steel prices, which occurred several days ago. As indicated in my last report, there was much opposition in the trade to another reduction at this time, and it is understood that there was a sharp fight in the Iron Industry Union. The reduction was carried finally by only a small majority. The decision is understood to have been largely influenced by the fact that prices have been reduced recently in most foreign markets, in some of them by a pretty wide margin. The home situation also appeared to call for a reduction.

Reduction About 14 Per Cent

The general cut is based upon a reduction of bars by 400 marks. These are now marked down to 2440 marks, as against 2840. The maximum reached last spring was officially 3650 marks; but considerable selling was actually done at higher figures. The new prices are as follows: Ingots, 1770 marks; blooms, 1895; billets, 1995; slabs, 2040; structural forms, 2340; bands, 2740; universal shapes, 2730; wire rods, 2720; heavy plates, 5 mm. thick or more, 3090; medium plates (3 mm. to 5 mm.), 3360; thin plates to one millimeter, 3470; still thinner grades, 3525. These prices are for basic material. The additional charge for open-hearth stock is 50 marks, whereas this difference till now was 65 marks.

This scale goes into effect Nov. 1, and it is to hold at least till April 1, or, according to another report, to March 1. This attempt to stabilize prices for so long a period is criticized in the press as likely to prove futile in view of the fluid condition of prices in outside markets. It is also pointed out that when the present scale was adopted, holding for three months from Aug. 1, it was believed that it could be maintained; but that there has been in point of fact considerable selling under scale in certain lines of goods. At present, it is pointed out, the home market is restricting buying to the utmost degree possible; owing to the unwillingness or inability of buyers to contract at existing terms; and it is believed that they will continue to hold off during the next four months, with the expectation that further reductions will have to be adopted before the winter has passed.

Pig Iron Not Reduced

Pig iron is not included in the reductions. At a meeting of the Pig Iron Association it was voted to leave present prices unchanged till the end of January, and the representative of the Government present agreed to this. One ground assigned for making no reduction was the further depreciation of the German mark, which involves higher prices on imported ores, besides the fact that latterly ocean freights have risen. The growing scarcity of pig is another element in the situation, due to the continued blowing out of furnaces, and it is probable that this factor will continue to prevent German pig from following the example set in outside markets. In the Upper Silesian district, for example, 15 furnaces are already out of blast, whereas that district is less hard hit by enforced deliveries of coal to previously hostile countries than the Ruhr district.

The market for scrap iron has somewhat weakened, and the best grades are now about 100 marks lower than at the end of September, or at 900 to 930 marks. The prices now quoted are only about one-third of the maximum reached last February.

The coal famine continues to be a serious menace to the iron industry. Reserve supplies at the mines have

been exhausted, or practically so. At a recent date stocks on hand amounted to only a fraction of one day's production. The transportation situation in the Ruhr district is worse.

A report on Upper Silesian trade shows it to be unsatisfactory. Steel for the building trade is in very light demand. Delivery periods are now much reduced, as compared with last spring. The demand for steel rails and track material is light. The state railroads have made only small orders so far. Business is also slack in beams and construction shop material. It is believed, however, that foreign business will pick up later, as there are many schemes in prospect for building railroads in a number of foreign countries where Germany should be able to compete. Several Silesian companies are about to add new open-hearth furnaces to their plants.

That the situation in France has grown less satisfactory is indicated by the fact that the Stumm Works at Neunkirchen in the Saar district, now controlled by French interests, have recently offered to supply the German market with 4000 tons monthly of rolling mill products at current German prices, whereas steel from the Saar has hitherto been sold in Germany at prices ranging 600 to 800 marks above German prices.

Russia Wants German Locomotives

Much interest was attracted in the German market last week by the report that Russia was about to sign a contract for locomotives with German shops amounting to the huge total of 600 million gold marks. It appears from later reports, however, that the matter was much exaggerated. Negotiations indeed have been under way, it is admitted, but they have not yet been concluded and the amount involved is less than one-third of that named above.

In this connection may be mentioned the report circulated some time ago in the foreign press, including American journals, to the effect that the Krupp company had underbid American firms in competition for contracts to deliver locomotives to Java. In a letter to your correspondent the company denies that it has put in a bid at all. Referring to the export of steel in general, the letter adds: "So far as the export of steel products is concerned, in consequence of the heavy reduction of our crude steel production, exports of most products had to be restricted to the lowest possible level, inasmuch as it was necessary to provide, in the first instance, for covering the requirements of the home market."

American Plates for German Ships

Calling attention to the recent report from New York that some 16,000 tons of ship plates had been bought there for German shipyards, the Krupp company writes that it is not able to confirm the report, but regards it as probably true, since the German steel works, owing to the heavy deliveries of coal to France under the Spa Agreement, are no longer able to supply the shipyards with the plates needed to keep their workmen employed.

That German makers have been doing a big business in oil piping is evident from a statement by the *Deutsche Bergwerks-Zeitung*. It reports that one Dutch company (Bataaf) has bought more than 400,000,000 marks' worth of such piping in Germany since the armistice, not to mention the large quantities of piping made for it abroad from German material. On the other hand, it is reported that the export control bureau at Duesseldorf has refused recently to permit a firm to export 12,000 tons of gas pipe and fine plates because it had already exceeded its quota.

It has been reported by a Swiss newspaper that the

international agreements in the iron trade that existed before the war have already been renewed, with the exception that England is not included in the arrangements. Inquiries made among the big works of the Ruhr district elicited the information that nothing is known there of the conclusion of any such agreements, though it was admitted that negotiations were in progress.

Further company reports are of the same splendid character as indicated in previous letters in these columns. The Hoesch Eisen und Stahlwerk reports a gross surplus of 51,600,000 marks, as against 8,000,000 marks last year. The Rheinische Stahlwerke had gross profits of 50,000,000 marks, comparing with 8,000,000 marks last year, and its dividend is 20 per cent against 5. The Geisweider Eisenwerke, the prin-

cipal concern in the Siegerland district, returns 7,000,000 marks gross earnings as compared with 858,000 marks last year. The dividend is 25 per cent against 10.

The great Harpener company, the most important coal company in Germany operated unattached to an iron company, had gross profits of 52,000,000 marks, as against 25,000,000 marks last year; its dividend of 12 per cent compares with 5 last year.

The Hochofenwerk Lübeck, the blast furnace company established at Lübeck about 10 years ago, is about to double its capital to 17,000,000 marks. The Phoenix company, in which, as reported in my last letter, Dutch capitalists have acquired large interests, is about to absorb the Köln-Neuessener Bergwerk, one of the important coal mines of the Ruhr district.

Reconstruction Work in France

An illustrated article in the *Revue de Metallurgie* for June describes the destruction of the plant at Denain in the north of France of the Societe Francaise de Constructions Mecaniques. This was a plant founded in 1812 and in 1914 employed 4000 to 5000 men. It had iron and brass foundries, an open-hearth department with two 15-ton furnaces built in 1910, a large forge with hammers and three presses of 250, 500 and 2500 tons, and extensive shops with 1500 machine tools. A total of 1575 motors were used in the plant.

The work of devastation was started December, 1914, by a Col. Zacharie, and continued from January, 1915, under Capt. Boecking, known as a metallurgist in civil life. The total ruin effected is described and illustrated. At the end of 1920 the work of reconstruction was in full swing, 880 machine tools were at work or reinstalled. In the forge shop 11 hammers, 30 forges and a 600-ton press were at work. In a provisional foundry two cupolas of 5 and 2 tons capacity respectively were being used, and in the large foundry two open-hearth furnaces were being built and three 5-ton cupolas. This holds out the hope that soon the French plants for mechanical construction in the invaded territory will be ready to do their share in the common work of reconstruction.

G. B. W.

Foreign Demand for Baily Non-Ferrous Electric Melting Furnaces

The rapidly developing demand for electric furnaces by foreign melters of non-ferrous metals is one of the important factors in the history of this industry this year, says the Electric Furnace Co., Alliance, Ohio. It has just shipped two 105-kw. Baily units to Norway which will be used to melt zinc at the Jossingfyord plant in Stavanger, and to melt aluminum at the Norsk Aluminum Works at Christiania.

Complete rolling mill brass melting furnaces, designed for pouring the metal directly into the molds, have recently been shipped by this company to The Amsinck Corporation of Mexico, Mitsui & Co. of Japan, and Allen Everett, Ltd., of England. The adoption of electric melting by the largest and oldest brass tube mill in England is especially significant at this time. The Amsinck company in Mexico already had a Baily tilting furnace for melting its brass cartridge slab. Both furnaces are for the Mexican Government arsenal. In addition to these units, Baily electric furnaces have recently been installed at three Canadian plants: the Dominion Steel Products Co., Brantford, Ontario; the Monarch Metals Co., Hamilton, Ontario, and the Union Screen Plate Co., Lennoxville, Quebec.

French Commerce Bureau Reorganized

The Office du Commerce Extérieur in France has recently been organized to continue on a larger scale. This department of the Government is similar to the United States Bureau of Foreign and Domestic Commerce. It is backed financially by the Foreign Commerce Bank. Pamphlets of trade information are supplied to French companies and information about

French markets is supplied to foreign traders. The department is preparing to publish a periodical similar to the British Board of Trade *Journal*. Commercial exhibition plans include a touring fair in Canada, the Colonial exhibition at Marseilles in 1922, an inter-allied exhibition at Paris in 1925 and small permanent exhibitions in foreign markets which have been opened in Spain, Switzerland, Czecho-Slovakia, London and the Balkan states.

British Iron and Steel Output in October

LONDON, ENGLAND, Nov. 22. (By Cable)

Production of pig iron in Great Britain in October amounted to 533,200 gross tons and that of steel was 544,300 tons, compared with 741,000 tons of pig iron and 883,900 tons of steel in September, with 752,400 tons of pig iron and 709,200 tons of steel in August and with 750,400 tons of pig iron and 800,000 tons of steel in July. The October pig iron output compares with an average of about 709,333 tons per month for the first nine months of this year and with the monthly average for 1919 of 617,000 tons. The October steel output compares with an average of 807,800 tons for the first nine months of this year and with the monthly average for 1919 of 658,000 tons. The October pig iron and steel production was the largest for any month this year, due to the coal strike.

Plans of Commercial Shearing & Stamping Co.

In its new plant on Logan Avenue extension, Youngstown, Ohio, the Commercial Shearing & Stamping Co. will specialize in the production of small size steel plates and the blue annealed sheets, sheared to size. The plant will utilize excess tonnages of steel mill products and will convert them into marketable commodities. The main building is of the McClintic-Marshall type, 81 x 600 ft. on the ground plan and 37½ ft. high, and is located on a tract of 13½ acres owned by the company.

Its equipment consists of three gate shears, two Cleveland punch and-shearing machines, one Hilles & Jones machine, Fairbanks springless scales and auxiliary fittings. The building will contain two 10-ton overhead electric cranes, each operating the entire length of the bay in which it is installed. Heavy plates will be handled outside the building by a 20-ton McMyler-Interstate locomotive magnet crane. The shearing department will have capacity of 75 tons in 10 hours. There will be a complement of equipment for turning out small stampings and washers, in addition to machinery for shearing and handling heavy plates. A large warehouse will be maintained.

The company is closely allied with Carnick Bros., extensive dealers in scrap metals. It was incorporated April 21, 1920, and has a capital of \$350,000, all common stock. Robert Carnick is president; Robert V. Proctor is vice-president and manager in charge of operation; Jacob Carnick is treasurer, George C. Tinsley secretary and sales manager and Guy T. Ohl, counsel.

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ESTABLISHED 1855

THE IRON AGE

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Progress in Readjustment

Each week adds testimony to the wisdom of the Federal Reserve Board's policy of bringing about deflation. A start was made on this policy early in the year, when fears were felt that if preparation were not made a panic would develop in August or September. Those months passed without any panic, and even now there is no panic, although a great readjustment is in progress. It must be concluded that the forces tending to produce a panic were very great, for, although they have been tempered, yet their influence is strong; also, that a longer period for liquidation has been furnished than would have been the case if inflation had been permitted to pursue its headlong course.

Occasionally the Federal Reserve Board's action has been criticized, but much of the criticism really serves to emphasize the value of the work. There was, for instance, the criticism based on the dictum that "what the country needs is production," with an inference that when anything was done that tended to curtail production an injury was done to the economic situation. The cry for production, however, was set up with the thought that the goods produced would reach the ultimate consumer, and it was found afterwards that large quantities of goods were being withheld speculatively to maintain prices. Production had been wanted simply for the purpose of forcing prices down; but when the condition developed of goods being kept from the market, the end could be attained by forcing the speculators to release the goods. Production has been curtailed only when there has been a surplus.

Our high prices have been made up of high wages, inefficiency and large profits. Prices could not remain indefinitely on such a basis. Except as regards foreign trade, it matters relatively little what the wage rates are, if they are proportionate in various classes of work. In that event, they should be assured also of permanence, so that the investor is not deterred from engaging in works of permanent construction calculated to yield a return over a period of years in competi-

tion with other construction that may come on in future.

Inefficiency cannot be tolerated as a basis for progress. Human effort, whether of the sales manager, the purchasing agent, the superintendent or the workman, must be efficient. We cannot, collectively, have the good things we enjoyed before the war if the sum total of effort is not as great. As to profits it is obvious that the total cannot be increased except by greater activity or increased efficiency. If the amount of work done is not increased, increased profits can be secured by some only at the expense of reduced profits accruing to others.

In this readjustment the distribution of profits is taken into account. When there was a seller's market and the buyer was willing to pay any price asked the seller could include his cost, whatever it might be, in the selling price, adding such profit for himself as he desired. When there is a buyer's market the buyer does not accept the seller's "cost" as final, since that cost may include inordinate profits allowed to those from whom the seller purchases his raw material. In other words, there must be a telescoping of profits. The discussion as to costs takes on a different aspect.

Progress in the readjustment is as rapid as reasonably can be expected. Efficiency will not increase quickly to the extent required. As for the telescoping of profits, some of the draws slide more easily than others, and it will be necessary to give the others time.

It is possible now to take some measure of the recovery in the French and Belgian steel industry, whose output sank to extremely low levels during the war. According to the latest data available, pig iron production in France in the first seven months of this year averaged 221,130 gross tons per month, with the steel rate at 201,730 tons per month. These figures compare with a pig iron production in 1913 of 428,000 tons per month and steel production of 385,000 tons per month. In the case of Belgium the pig iron output to Aug. 1, this year, was 75,855 metric tons per month and that of steel, 89,755 tons per month, against 203,800

tons and 202,300 tons per month respectively in 1913. Taking the combined pig iron and steel production in each case, the extent of the 1920 recovery of the 1913 rate has been about 52 per cent in the case of France and 40 per cent in the case of Belgium. In England there has been an actual gain. The pig iron and steel outputs together averaged 1,503,000 tons per month to Sept. 1, this year, as against 1,494,000 tons per month in 1913. While the recovery in France and Belgium has still a long road to go, the progress thus far made has been noteworthy.

Engineers to Light the Way

Engineers have built a machine designed to operate for the public good. Sooner or later it is expected to be widely recognized as built for the purpose stated—the well-being of the country, socially and economically, so far as engineers can serve—and not for individual benefit and only remotely for that of the engineering group. As professional men engineers have long taken themselves seriously, but have not felt that the community fully shared this view. There is no gain-saying that great construction projects, industrial legislation and other concerns of modern civilization have been carried to advanced stages with little or no call for the advice of engineers, through their various societies or in any other broad way, even though engineering questions have been involved.

The belief has been growing that engineers should attain recognition through collective action and secure public confidence partly through such means. Thus a reservoir of expert knowledge would be ready for tapping whenever the expediency of proposed legislation affecting industry or of plans for conservation of natural resources is questioned. Accordingly the American Engineering Council has been created. An auspicious start has been made by securing an engineer of international fame for its president—Herbert Hoover. In a word it may be described as a machine of the universal order, in machine shop parlance, capable of performing several operations. Precisely what it is to do is as yet somewhat vague, most of the effort having been directed, rightly no doubt, to perfecting the mechanism. It remains that this super-organization, composed of representatives of engineering associations all over the country, must take the initiative in showing its capacity for public service, looking to the time when its counsel will be sought by governmental and other public agencies. Publicity is to be its watchword and the press will be freely supplied with the findings of committees through which much of the work doubtless will be done.

What the council cannot yet claim is that it represents most of the engineers of the country. Conspicuous among the associations which have not affiliated is the American Society of Civil Engineers, and the movement thus far lacks the numerically strong American Association of Engineers. However, with the support of ten more organizations that now actively consider joining, the council will be in the position of speaking officially for half the great body of American engi-

neers. What is of chief importance is that through its member-societies it has the call on engineers of acknowledged preeminence. Its influence on that account will make its numerical basis of secondary account, no matter to what size it may grow.

The period of putting the new machine into action will be the test. If the determination of the front rank engineers who have labored to build it is a criterion of its ability to perform, then those societies now looking on will wish to be partners in the enterprise. Fear of failure and the cost of running the machine have their influence in delaying decisions; but if the fear is proved baseless and the cost is found to be no real bar, it cannot be that the associations absent from the council table will long remain aloof, so lofty is the aim of the new organization and so large its promise of good.

Readjusting Wages Fairly

During the war period union labor, by striking and by resort to other methods, took full advantage of its opportunity not only to advance wages and reduce hours of labor but also to extend union organization, even in the face of mutual pledges of employers and union leaders to maintain the pre-war status of closed and open shops. Now that many lines of business are depressed and unemployment is increasing, employers might be disposed to retaliate; but it is gratifying to know that as a rule they have aimed to be fair in bringing about readjustments of wages.

One of our correspondents calls attention to the action of a Western machine tool builder who recently found it necessary to curtail his working force materially and reduce the wages of those not laid off. After the number of employees was cut down by laying off the less competent men, the cases of the remaining workmen were taken up individually. Each employee was called into the office and the situation was put to him substantially as follows:

"For a long time the wage market has been high. You have been given the market price for your labor, and consequently have enjoyed the benefit of high wages; but now the wage market is lower and you should not expect to be paid above the market price for your labor. Men are coming to our employment office every day anxious to take your place at lower pay than you are receiving. It is only fair to you that you be given the first chance and be allowed to retain your present job at the present market price for the labor you are performing."

When the matter was presented in this way, the employees admitted the reasonableness of the wage reduction and accepted it. In working out new rates, the company did not make a flat cut, but attempted to remove some of the inequalities that had existed, the aim being to come to a basis representing a 20 per cent reduction from the labor costs that had long existed.

Most men mean to be fair, and in times of slack business radical labor agitators have little influence. What is more important, moreover, than the readjustment of wage rates is that workmen agree to

remove the restrictions upon output which have been a crying evil in the period now drawing to a close. Tactful and fair-minded handling of the problem by employers in these transition months will not only meet the economic requirements of the situation, but will go far toward establishing good will as the basis of future relations, admittedly the greatest of all needs at this time.

The Rectification of Exchange

No surprise should be felt that two years after the armistice the exchange situation is not righted. Nothing has occurred to bring rates on European countries back toward par, but on the other hand a great deal has occurred to send rates the other way. Other things being equal, when we export to a country on which the rate is below par more than we import from that country, the tendency is to distort the rate farther, and that is what has been occurring. Last year our exports exceeded our imports by four billion dollars, and this year the excess is likely to be not much less than two billions.

If the exchange situation were given more study by the American people more progress would be made toward its rectification. Often manufacturers express the hope that exchange rates may improve so that they can book more export business, when the filling of such business would simply tend to distort the rate again. The exchange rate structure being so complicated, a single country may be taken for illustration, and France is a good subject, the rate on Paris being much farther from par than the rate on London, but not as far as the rate on Rome. Of late the rate on Paris has been in the neighborhood of six cents, so that one could buy a French franc for about six cents instead of having to pay 19.3 cents, the normal, or the Frenchman must pay nearly 17 francs for an American dollar instead of the normal of 5.18 francs. In a sense, the French buyer must pay three prices for American goods, while the American importer can get French goods at one-third price. Now, if the exchange rate should improve to ten cents for a franc or ten francs for a dollar, the French buyer would have to pay only double price for American goods and the American buyer would get only one-half off instead of two-thirds off on French goods. Our exports would be encouraged and our imports discouraged, and thus the international trade would tend to send the exchange rate farther from par again.

The trouble about exchange, of course, is the difficulty in making payment. It is commonly said that the other countries are not producing enough goods to make it possible for us to buy freely from them; but that is superficial, since it is plain that we do not want to buy the large quantities of foreign goods it would be necessary for us to take. The South of late has been objecting strenuously to our importing limited quantities of peanuts and tobacco, and is stirred with the idea that we should impose a tariff to stop the thing.

Reverting to the case of France, our reported exports to that country in the first eight months of this year amounted to \$452,125,373, while our

imports from France were \$117,973,165. Obviously that does not tend to restore the exchange rate. A decline in prices in France would tend to increase our imports and diminish our exports. This would improve the exchange situation, but would not suit us in other respects at all. We do not wish to import more and export less, for we want an improved exchange rate in order to export more.

If we do not take goods we can take something else. During the war exchange rates were stabilized by our co-belligerents borrowing from us whatever sums were necessary from time to time to keep the exchange rates at predetermined figures. A similar influence would be exerted now if we sold on extended credits, or bought French bonds or property or erected factories in France. Some of these things may be done in time. If not the exchange rate will not be restored to par except by our exporting much less than we wish, or importing much more than we think is good for us.

Foundry Research

The formation in Birmingham, England, of the "British Gray and Malleable Cast Iron Research Association" is another example of a significant tendency in industrial metallurgy. Coördination of research and making it available to those most in need of it are some of the ends desired. Apparently, some ardent advocates of the scheme expect to revolutionize the British industry. One authority points out, however, that this is impossible; "that the industry has a wealth of practical experience behind it which enables it to produce castings that compare favorably in quality and quantity with those produced in other countries; that the founders have had at their disposal research laboratories and metallurgical chemists of practical experience." It is added that many companies have taken advantage of these facilities and been benefited, even though others have not. The work of the new association will be to spread technical knowledge or call attention to it and to coördinate research and expert advice for the benefit of all members.

This movement may have originated in the United States. At least, the best example of it is the association connected with the American malleable iron industry. The work of this organization has been pointed to as yielding excellent results for its members. A similar movement on a smaller and somewhat different scale was recently started in the steel casting industry by a particular group. In each case a metallurgist of distinction and authority is the technical main-spring.

A significant statement at the meeting at which the new British association was formed was that American castings are not really better than British but that they are more regular as made by different foundries, whereas one lot of British castings may be superlatively good and another exceedingly bad. The new association will aim to secure uniformity at least. Whether the regularity of the American gray iron or mal-

leable products is due entirely to co-operation in research, it is impossible to say. It is certain, however, that any institution that spreads knowl-

edge and points out errors or calls attention to the many good things to be found in the technical press is doing a needed work.

F. J. Frank the New President of Iron Age Publishing Co.

With great regret THE IRON AGE announces that William H. Taylor, who has been its president and general manager for more than ten years, has resigned because of ill health



FRITZ J. FRANK

and has retired from active connection with the Iron Age Publishing Co. In the past week he left for an extended stay in Florida and it is the wish of all who have been associated with him in the making of THE IRON AGE that this release from business responsibilities will bring a full recovery of his strength. In 1909 Mr. Taylor came to THE IRON AGE as general manager, after a group of publishers had acquired the ownership from David Williams. Previously Mr.

Taylor had been connected with various trade and engineering publications over a period of 15 years, having been for a time vice-president of the McGraw Publishing Co. and later president of the Taylor Publishing Co., Chicago, which consolidated the *Engineer* and *Steam Engineering*. He and his associates, on acquiring THE IRON AGE, separated what long had been the hardware department of this journal and established it as the *Hardware Age*, which has had a vigorous growth alongside the parent publication.

The progress of THE IRON AGE under Mr. Taylor's administration has carried it far beyond the expectations of those so long responsible for its conduct under the previous regime. The number of employees of the company is nearly three times that of ten years ago. It has been the decade of the largest development of this journal in all its 65 years—a result in great measure due to Mr. Taylor's broadminded policies and the building up of an effective organization in every department.

At a meeting of the directors of the Iron Age Publishing Co. held on Nov. 19, Fritz J. Frank was elected to succeed Mr. Taylor as president. Mr. Frank's business career has been a continuous connection with publishing, and his knowledge of the industries represented by THE IRON AGE has been intimate and of long standing. His school training was taken in Florida, to which State his parents removed from Pennsylvania in 1884 when he was a boy of 12. He graduated from Rollins College, Winter Park, Florida, with the degree of A. B. in 1896. His chosen work began in 1898 when he became western business manager of the *Colliery Engineer*, a Scranton, Pa., publication of national circulation in the coal mining field, Mr. Frank's headquarters being in Chicago. He was impressed at that time, when American manufacturers were doing relatively little in the export trade, with the importance of cultivating relations with foreign buyers, and in 1902 and 1903 he made a tour of the world investigating possible markets for American mining machinery. In 1906 he left the *Colliery Engineer* and became the Chicago representative of the *Mining and Scientific Press*,

that relation continuing up to 1910 when he came with THE IRON AGE as advertising manager in the New York territory. In 1911 he was made secretary of the David Williams Co., predecessor of the Iron Age Publishing Co., and since 1918 has been vice-president of the latter company.

Mr. Frank has a wide acquaintance in the iron and steel and machinery trades, is experienced in business journalism and is thoroughly committed to THE IRON AGE's traditions and standards, among which are complete independence of editorial expression and making the reader's interests paramount to all other considerations. With the added loyalty of a strong organization there is warrant for promising even a greater IRON AGE and larger capacity for service to its splendid constituency in the years just ahead.

MORE ACTIVITY IN BELGIUM

Counting on Early Independence in Sheets—Plant Expansion Proceeding

BRUSSELS, BELGIUM, Nov. 10.—The fear of some producers that the disaffection of buyers would continue indefinitely seems unfounded. There is a heavy demand for malleable iron and if orders now pending for this and other materials are closed numerous Belgian plants will be booked up for many months. Large inquiries are now appearing from Spain, where the metal-working industry is making rapid strides. These inquiries are generally for large tonnages of iron, steel and copper wire, small rods and small orders of sheets cut to special sizes. From the Levant and northern Africa there is active buying of woven metal for fencing.

On orders totaling 300 tons or more most manufacturers show an inclination to shade prevailing prices, but on small orders prices show considerable stiffness. The depression in all kinds of material has probably affected rail and structural mills more than others, owing to the light demand at this season.

The rolling mills of Monceau Saint Fiacre continue their new installations and the Usines Bonehill have announced that they will in the future specialize in sheets for automobile builders, locomotives and tenders, light ship plates and chromium, silicon and electric sheets. This is in line with the policy of Belgian industry to specialize. The gradual increase in production of sheets will make Belgium practically independent of American and British material, for which buyers have in the past paid what they considered excessive prices.

The Société des Tuyauteries et Trefileries will shortly erect a new plant at Haine, St. Pierre. Belgian mills are opening their books for export tonnages of billets, 9/16 in. and larger.

Several foreign government inquiries for estimating purposes are in the market for rolling stock. Belgian locomotive builders are working on orders for about 70 express locomotives for the Belgian railroads.

A. L. Button, secretary of the Trumbull Steel Co., Warren, Ohio, states there will be no suspension of construction of the new blast furnace being built for the Trumbull Steel Co. by the Trumbull-Cliffs Furnace Co. Mr. Button states that the tinplate and sheet mills of the company are operating close to normal and that the only department which has slackened is the strip department, engaged largely in producing material for the automobile trade. A new strip mill is being installed at this time.

Iron and Steel Markets

RAIL PRICES FOR 1921

Independent Mills Will Not Roll on \$47 Basis

Free Buying in All Lines Awaits Wage Readjustments

The Steel Corporation's announcement that it would not advance its prices unless "altered conditions" made advances necessary has had no measurable effect on the steel market, and its precise intent is not yet clear. It has been understood that the corporation seriously considered advancing rail prices, and the fact that it made large contracts for 1921 into which the price was to be written later pointed to a higher level than \$47, which it has maintained since March, 1919.

Several independent mills that for more than a year have charged \$55 and higher for rails, have refused to book orders for 1921 with the proviso that the Steel Corporation price govern, and some of these mills could not meet the Steel Corporation's \$47 price without a drastic readjustment of wages and other costs. In view of the large rail requirements for next year the situation created by the Steel Corporation's stand is a matter of widespread comment in the trade. Yet the prices to govern on 1921 rail contracts have not been fixed at this writing.

Expectations of a speedy drop in independent producers' prices on rolled products to those of the Steel Corporation have been disappointed. In some lines, as automobiles and agricultural implements, new buying on any scale is likely to be delayed four or five months. Meanwhile there is more profit in shipping on contracts than in taking new business at cut prices. More shutdowns of independent mills are looked for, and buyers are not expected to contract freely until the great readjustment has come, which will involve general wage reductions.

Further cancellations and suspensions have come on finished steel contracts, some of it being low-priced material.

A test of the bar market was given by an order for several hundred tons in northern Ohio, divided among three mills at 2.90c., 2.95c. and 3c., Pittsburgh. Yet in the Chicago district an independent maker has made further sales at the Steel Corporation's price of 2.35c. In the plate market 2.90c. and 2.85c. quotations are still appearing, though no significant tonnage has come up.

The Steel Corporation's operations are on a scale running up to 85 per cent in the Pittsburgh and Chicago districts and at 80 per cent at some other plants. Independent companies are operating at 50 to 70 per cent and a number of smaller rolling mills in the Cleveland and Chicago districts are closed down.

Standing out in the structural trade are two contracts closed at Chicago, one for 8800 tons for the local Federal Reserve Bank and the other for 3500 tons for the Keith theater at Cleveland. The award on 8000 tons for a Buffalo hotel is expected this week. In cars an inquiry for 3000 by the Wheeling

& Lake Erie is mentioned, and 800 for two western roads.

Wire mills are catching up with unfilled orders. Independent companies which have been quoting nails at \$4.50 and plain wire at \$4 have receded to the levels of other sellers at \$4.25 and \$3.75 respectively, while the Steel Corporation continues its price of \$3.25 for nails, which is commonly considered to mean a very meagre profit.

The sheet bar market has attracted some attention in view of a quotation of \$55 at Cleveland on 9000 tons for the first quarter, and a still lower bid was reported. In the Pittsburgh district a much lower price was made by an independent mill on a 6000-ton lot.

Current export trade in iron and steel is about one-third the volume of a few months ago. One sale of the week was of 5000 tons of structural steel to the Dutch Government, made by the Steel Corporation, the price being close to 2.65c., Pittsburgh, or about \$4 per ton higher than the basis for domestic business.

Requests for cancellations of pig iron orders have come in in increasing numbers and furnaces continue to refuse these except where there have been long delays in deliveries. Postponements are granted, however. Birmingham furnaces are selling more freely at \$38 and resales of Southern iron are made at \$37. Concessions of \$2.50 on steel making grades in the Pittsburgh district have failed to develop business. Many foundries are melting only a small percentage of their usual tonnage and have substantial stocks on hand. Considerable resale iron must be absorbed before the furnaces become active sellers. Producers are pointing out that it will be impossible to reduce coal miners' wages owing to existing agreements, and for this reason the price of coke is likely to continue high.

Quotations on heavy melting steel have been reduced \$3 per ton in the Pittsburgh district and the scrap market is everywhere weak.

Pittsburgh

PITTSBURGH, Nov. 23.

Demand for iron and steel still is on a diminishing scale, and apparently a turn for the better is still some distance off. Buyers feel that they have nothing to gain by making purchases at present and are ordering and specifying, at least with independent companies, with considerable conservatism. In pig iron the week has not developed a sale of sizeable proportions, and further concessions have been announced by merchant producers of the steel making grades in an attempt to uncover a demand and also to bring their prices more nearly in line with what some of the steel companies, having a surplus of basic, have been quoting lately.

Most of the independent steel companies soon will be in need of new business to keep going. Buyers do not think they should pay more than the March 21, 1919, schedules, and such price modifications as have been announced by independent steel companies have not appealed with much strength. Illustrative of this was a recent opening of books for first quarter business by a Pittsburgh district sheet maker at prices from

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics
At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Nov. 23, 1920	Nov. 16, 1920	Oct. 26, 1920	Nov. 25, 1919
No. 2X, Philadelphia [†]	\$42.79	\$44.79	\$51.54	\$36.10
No. 2, Valley furnace [†]	39.00	39.00	45.00	32.00
No. 2 Southern, Cin'ti [†]	42.50	42.50	46.50	36.60
No. 2, Birmingham, Ala. [†]	38.00	38.00	42.00	33.00
No. 2 foundry, Chicago [*]	40.00	40.00	43.00	32.00
Basic, del'd, eastern Pa. [*]	41.16	41.16	46.16	31.25
Basic, Valley furnace.....	35.00	37.50	40.00	30.00
Bessemer, Pittsburgh.....	39.46	41.96	46.96	32.90
Malleable, Chicago [*]	40.50	40.50	43.50	32.50
Malleable, Valley.....	37.50	40.00	46.00	32.00
Gray forge, Pittsburgh.....	39.96	39.96	45.96	32.40
L. S. charcoal, Chicago.....	53.50	53.50	58.50	39.00
Ferromanganese, Atl. port.....	140.00	140.00	155.00	110.00

Rails, Billets, Etc., Per Gross Ton:

Bess. rails, heavy, at mill.....	\$55.00	\$55.00	\$55.00	\$45.00
O.-h. rails, heavy, at mill.....	57.00	57.00	57.00	47.00
Bess. billets, Pittsburgh.....	50.00	50.00	55.00	43.00
O.-h. billets, Pittsburgh.....	50.00	50.00	55.00	43.00
O.-h. sheet bars, P'gh.....	55.00	60.00	62.50	46.00
Forging billets, base, P'gh.....	60.00	60.00	65.00	58.00
O.-h. billets, Phila.....	55.74	55.74	60.74	47.50
Wire rods, Pittsburgh.....	65.00	70.00	75.00	55.00

Finished Iron and Steel,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia.....	4.60	4.60	4.85	3.245
Iron bars, Pittsburgh.....	4.50	4.50	4.75	3.25
Iron bars, Chicago.....	3.75	3.75	3.75	2.77
Steel bars, Pittsburgh.....	3.00	3.00	3.00	2.75
Steel bars, New York.....	3.38	3.38	3.38	3.12
Tank plates, Pittsburgh.....	2.85	2.85	2.85	2.65
Tank plates, New York.....	3.38	3.38	3.38	2.92
Beams, etc., Pittsburgh.....	3.00	3.00	3.00	2.45
Beams, etc., New York.....	3.38	3.38	3.48	2.72
Skelp, grooved steel, P'gh.....	3.25	3.25	3.25	2.45
Skelp, sheared steel, P'gh.....	3.50	3.50	3.50	2.65
Skelp hoops, Pittsburgh.....	4.00	4.00	5.00	3.25

*The average switching charge for delivery to foundries in the Chicago district is 70c. per ton.

†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

The prices in the above table are for domestic delivery and do not necessarily apply to export business.

Sheets, Nails and Wire,	Nov. 23, 1920	Nov. 16, 1920	Oct. 26, 1920	Nov. 25, 1919
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh.....	5.50	6.00	6.50	4.35
Sheets, galv., No. 28, P'gh.....	6.70	7.25	8.00	5.70
Sheets, blue an'l'd. 9 & 10.....	4.50	4.75	4.90	3.55
Wire nails, Pittsburgh.....	4.25	4.25	4.25	3.50
Plain wire, P'gh.....	3.75	3.75	3.75	3.10
Barbed wire, galv., P'gh.....	4.45	4.45	4.45	4.25
Tin plate, 100-lb. box, P'gh.....	\$7.00	\$7.50	\$8.50	\$7.00

Old Material, Per Gross Ton:

Carwheels, Chicago.....	\$32.50	\$33.00	\$34.00	\$30.00
Carwheels, Philadelphia.....	36.00	38.00	40.00	30.00
Heavy steel scrap, P'gh.....	20.00	23.00	27.00	23.00
Heavy steel scrap, Phila.....	18.00	19.00	22.00	21.50
Heavy steel scrap, Ch'go.....	17.50	18.50	20.00	20.50
No. 1 cast, Pittsburgh.....	29.00	35.00	38.00	28.00
No. 1 cast, Philadelphia.....	31.00	34.00	38.00	29.00
No. 1 cast, Ch'go (net ton).....	21.50	22.00	26.00	29.50
No. 1 RR. wrot, Phila.....	24.50	24.50	27.00	30.00
No. 1 RR. wrot, Ch'go (net).....	16.00	16.50	19.00	23.00

Coke, Connellsville,

Per Net Ton at Oven:				
Furnace coke, prompt.....	\$8.00	\$8.00	\$11.00	\$6.00
Furnace coke, future.....	9.00	9.00	12.00	6.00
Foundry coke, prompt.....	9.00	9.00	13.00	7.00
Foundry coke, future.....	10.00	10.00	13.00	7.00

Metals,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York.....	14.50	14.75	15.25	19.50
Electrolytic copper, N. Y.....	14.50	14.75	15.25	19.00
Spelter, St. Louis.....	6.00	6.35	7.10	7.85
Spelter, New York.....	6.40	6.80	7.50	8.20
Lead, St. Louis.....	6.00	6.37 1/2	6.75	6.55
Lead, New York.....	6.00	6.50	7.00	6.75
Tin, New York.....	37.00	37.00	40.25	54.12 1/2
Antimony (Asiatic), N. Y.....	5.87 1/2	6.00	6.50	9.25

\$5 to \$11 per ton below the contract minimums, which met with only a slight response from buyers.

There seems to be considerable satisfaction among the independent steel companies over the recent pronouncement as to the price policy of the Steel Corporation. The fear recently existed in some quarters that the Corporation might make some concessions even from its present levels, but the statement of Judge Gary is interpreted as meaning that such a possibility now is unlikely, although it is pointed out that the declaration leaves the door wide open for any changes that future conditions may dictate.

Outside of sheets and tin-plate, there has been no marked change in independent steel company prices, but that the closing of the gap between these and the Corporation quotations is slow may be ascribed to a desire on the part of the independents to protect such unexpected business as is on their books. Plant operations are at about the same average rate as a week ago. The Carnegie Steel Co. is running about 85 per cent of its iron and steel-making capacity, while the other Corporation subsidiaries also are running at a relatively high rate. A fair estimate of the general activities of the Corporation is somewhat in excess of 80 per cent. Independent steel companies are running between 50 and 60 per cent.

Transportation conditions leave little to be desired, although the Pennsylvania Railroad is not yet functioning in normal fashion. This road had pretty heavy congestion of loaded cars along its lines, and because of a landslide just east of its main terminal in Pittsburgh, it has been obliged to provide 1000 cars or more a day in the removal of the dirt from its tracks. Other roads serving this district actively are soliciting business, and the recent restoration of tight-bottom gondola

cars to general service has been a considerable help in reducing accumulated mill stocks. Plenty of box cars also have been available, evidence of which is found in the fact that in the past week or ten days the American Sheet & Tin Plate Co. has been able to clean up approximately 7500 tons of finished material which had accumulated at its plants. The coke regions have had rather poor car placements in the past week or ten days, and this has had the effect of holding up shipments and staying the drop in prices. An utter absence of buying has resulted in a severe break in scrap iron and steel prices.

Pig Iron.—Desire to uncover any possible demand that may exist for the steel-making grades has impelled another cut of \$2 to \$2.50 in prices. Merchant producers now are offering to take business in basic at \$35, Valley furnace, and have named \$37.50 on standard Bessemer and malleable grades. No business has resulted, which in the case of basic grade may be ascribed to the fact that some of the steel companies having surplus tonnages have expressed a willingness to take business at \$33 and \$34, furnace. No. 2 foundry holds at \$39, Valley furnace, in the lack of inquiries by which to test this price. It is probable that the appearance of important tonnages in any of these grades would develop further declines. Merchant furnace interests, while admitting the necessity of doing their part in the general readjustment of prices, are inclined to decry suggestions that the market will recede to the March 21, 1919, schedules, pointing out that there have been two wage increases, not to mention increase in freight rates, in the meantime. No change is noted in the number of active merchant furnaces in this district since a week ago, but the Carnegie Steel Co. has one more furnace not blowing and the Jones & Laughlin

Steel Co. also has retired one furnace, now having six out of 12 furnaces in blast.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being \$1.96 per gross ton:

Basic	\$35.00
Bessemer	37.50
Gray forge	38.00
No. 2 foundry.....	39.00
No. 3 foundry.....	38.50
Malleable	37.50

Ferroleloys.—The trade is absolutely dead and no definite statement can be made as to prices. Consumers of the various alloys are so well supplied that they are not interested in the market even to the extent of making inquiries, and a number of them have surplus tonnages they would be glad to sell if a demand existed. Producers, meanwhile, are refraining from pressing sales because they feel that the naming of prices, no matter how attractive, would not result in business. Quotations given are entirely nominal and probably are considerably above what actual sales might be made at.

We quote 76 to 80 per cent ferromanganese at \$140 to \$150, seaboard, for either domestic or English material, on direct sale for prompt delivery, and \$150 for first quarter 1921 shipment; resale tonnages \$135 to \$150 seaboard. We quote average 20 per cent spiegeleisen nominal at \$75 furnace and 50 per cent ferrosilicon nominal, \$75 to \$80 furnace, freight allowed. Bessemer ferrosilicon is quoted f.o.b. Jackson County and New Straitsville, Ohio, furnaces as follows: 9 per cent, \$66; 10 per cent, \$69.50; 11 per cent, \$72.80; 12 per cent, \$76.10. Silvery iron, 6 per cent, \$56.50; 7 per cent, \$58; 8 per cent, \$60; 9 per cent, \$62; 10 per cent, \$64.50; 11 per cent, \$67.80; 12 per cent, \$69.80. The present freight rate from Jackson and New Straitsville, Ohio, into the Pittsburgh district is \$1.06 per gross ton.

Plates.—No improvement can be reported in the demand and while all independent makers are adhering to 3c., this is more of an asking than a selling price and there is little doubt that desirable tonnage would elicit substantial concessions.

We quote sheared plates of tank quality, ¼ in. and heavier for early delivery from independent mills at 2.85c. to 3c. Pittsburgh. The Carnegie Steel Co. still quotes 2.65c. and is accepting business at that figure, but is not guaranteeing early delivery.

Structural Material.—Much interest is being taken in fabricating circles here in the Statler Hotel project at Buffalo, which involves about 8000 tons of steel and constitute the largest prospect on the market. The general contractors' bids went in against this building yesterday and the award is expected to be announced late this week, if the bids are within the price limits of the investors who it is understood have figured that they can afford to pay \$5,000 per room or \$10,000,000 for the completed hotel. The McClintic-Marshall Co. has taken 150 tons for a building for the Schwartz Motor Truck Co., Reading, Pa. No other business involving as much as one hundred tons has come to fabricators in this district and because of the improvement in the car supply and transportation situation, most of the shops have materially reduced their back logs. Plain material is dull and easy and independent quotations would be shaded against attractive business. Prices are given on page 1438.

Billets, Sheet Bars and Slabs.—The most interesting development in this division of the market has been the purchase by a Pittsburgh district sheet maker of 6000 tons of open-hearth sheet bars at the Steel Corporation price of \$47 from an independent maker. This company recently put out an inquiry for 9000 tons of sheet bars for delivery during December, January and February. No information is provided as to the seller, but the assumption is that unusual reasons caused him to sell at the low price. Bids against this inquiry ranged as high as \$65 and most makers named \$60. In view of the existence of contracts at \$60 and \$65, it is doubtful if regular makers to-day would sell at much less than \$60. Demand for billets and slabs is exceedingly small and \$55 Pittsburgh or Youngstown, which is quoted by most independent makers, is merely the asking price. The National Tube Co., which recently inquired for a tonnage of ingots, slabs and plates aggregating close to 50,000 tons, has practically withdrawn the inquiry without having made any purchases.

We quote 4 x 4-in. soft Bessemer and open-hearth billets at \$43.50 to \$55; 2 x 2-in. billets, \$47 to \$58.50; Bessemer sheet bars, \$47 to \$60; open-hearth sheet bars, \$47 to \$60, and forging billets, ordinary carbons, \$60 to \$65 base all f.o.b. Youngstown or Pittsburgh mill.

Wire Rods.—The independent market is gradually weakening because of the fact that not only have premium prices disappeared on common wire products, but even quotations of the large independent companies on nails and wire are not readily obtained, and this, of course, makes profitable conversion of rods at recent prices impossible. Generally, the asking price of the independent makers is \$70, but the highest price recently obtained was \$68 and at least one maker would entertain a bid of \$65. Prices are given on page 1438.

Wire Products.—New business in common wire products with independent companies is on a declining scale and all of them are catching up with their unfilled orders. Companies which have been quoting nails at \$4.50 base per keg and plain wire at \$4 base per 100 lb. have receded to the levels of other independents, all now quoting \$4.25 and \$3.75 respectively. Buyers are not interested in requirements at these figures, as they expect lower prices. The leading interest has been moving large quantities of nails and wire by water into the Northwest to cover the requirements of that section before the close of Lake navigation. This movement now is pretty well completed and other sections probably now will fare better in the matter of shipments.

We quote wire nails at \$3.25 base, as the price of the American Steel & Wire Co., and \$4.25 by independent mills. We quote bright basic wire at \$3.25, the price of the American Steel & Wire Co. and \$3.75, the price range of the independent mills.

Tin Plate.—Now that it has become apparent that the American Sheet & Tin Plate Co. will make no change in its price for 1921 business, the price idea of most of the independents has settled down to \$7 per base box against production tonnage and buyers lately have had no trouble in picking up good sized quantities of stock items at that figure. Indeed, unverified reports have been current that stock tin plate has sold as low as \$6.50. Manufacturers are inclined to ascribe such reports to some of the can companies anxious to break the market.

We now quote tin plate to domestic consumers at \$7 per base box; stock items, \$7, and for export, \$8 to \$9 per base box, all f.o.b. Pittsburgh.

Iron and Steel Bars.—The independent market on merchants' steel bars has pretty definitely settled to a 3c. base, but almost nothing is going on the books of makers, and broad intimations are heard that desirable inquiry would develop a decline. Business in reinforcing bars is at a standstill, and while quoted up to 3.50c for those rolled from new steel, no important sales recently have been done at above 3.25c., and there have been reports of sales at the mild steel bar base. High labor costs are offered in explanation for the maintenance of prices on refined iron bars. Demand for the latter has quieted down considerably in the past few weeks.

We quote steel bars rolled from billets at 2.35c., this being the price of the Carnegie Steel Co. for very indefinite delivery, likely not before first quarter of next year. Other mills rolling steel bars from billets quote from 3c. at mill. We quote reinforcing bars when rolled from billets, at 3.25c. and from old steel rails at 3c. at mill. We quote common iron bars at 4.15c. to 4.50c. and refined iron bars at 5c. to 5.50c. in carloads, f.o.b. mill, Pittsburgh.

Hot-Rolled and Cold-Rolled Strips.—New business is almost completely lacking and actual market prices are indefinite. Most makers continue to nominally quote cold-rolled strips at 8c. base, but it is known that others have quoted and accepted business at 7.50c. base, and it is believed the market is nearer the latter than the former figure. Hot-rolled strips are quoted at 5c. base by several producers, but quotations of 4.50c. and even 4c. are reported to have been made by some companies.

Nuts, Bolts and Rivets.—Activities still are on a tapering scale and the trend of prices is distinctly in favor of buyers. Some makers of small bolts claim to

be sold three or four months ahead and are not taking business for shipment before the second quarter of next year. On the other hand, there are some who are promising delivery before the end of the year and on large bolts, shipments can be made against new orders as promptly as three weeks. Expectation of lower prices makes buyers extremely cautious and a good many requests for cancellations, more especially of high-priced business, are coming to makers. The latter now are getting good deliveries of bars against orders, but complain of the difficulty of securing sufficient supplies of drawn wire. Prices and discounts are given on page 1438.

Sheets.—The Apollo Steel Co. recently opened its books for the first quarter of 1921, naming 5.50c. base for black sheets, 6.75c. base for galvanized and 4.50c. base for blue annealed. Some of the other independent companies are reported to have opened their books for the same period at the same prices. The response on the part of buyers is said to have been disappointing and the explanation given is that a number of consumers are overbought while the expectation of even lower prices is fairly general. Opening of books by the American Sheet & Tin Plate Co. now is regarded as a mere formality as far as prices are concerned, in view of Judge Gary's recent statement as to the price policy of the Steel Corporation. Current demand for all finishes of sheets is light and specifications are rather slow, although the leading interest reports no difficulty in the latter direction. Prices are given on page 1438.

Spikes.—The Louisville & Nashville Railroad has put out an inquiry for 15,000 kegs of standard spikes for early delivery. This inquiry constitutes the only important one which recently has come to makers in this district, all of whom are fairly well caught up with their old orders and are promising shipments in three or four weeks against new business. Standard spikes take the range of 4c. to 4.25c., but the latter price is not being obtained against sizable railroad business. Small spikes continue in good request but the movement is heavier on old orders than against new business. Prices and discounts are given on page 1438.

Cold-Finished Steel Bars.—Practically no new demands are being made upon the makers in this district and specifications against old orders are only fair as a general rule, although they are coming in well to one maker who had rather less than the usual amount of automobile business. The price range still is 4c. to 4.25c. base, for cold-finished steel bars, but these prices have little basis in sales, and are being adhered to by manufacturers solely because there is no way of knowing how much of a recession would have to be made to stimulate business.

Iron and Steel Pipe.—The recent modification by the Interstate Commerce Commission of car service order No. 20, restoring to general service all tight bottom gondolas regardless of height, already has been of considerable benefit to shipments by manufacturers. The National Tube Co. has been able to somewhat reduce its accumulated stocks and has made a better distribution than before in some little time. This company, because of the improvement in shipments, has been able to resume operations in the finishing department at its Riverside Works, Benwood, W. Va., where a suspension recently was forced by heavy accumulations. No let-up is observed in the general demand for pipe, either oil country or merchant goods. Makers are confining their bookings exclusively to the requirements of their regular customers, but in no case are allotments even to these customers being increased. Price discounts are given on page 1438.

Hoops and Bands.—No change is observed in independent prices, which still range from 3.70c. by manufacturers, who have idle bar mill capacity and can roll the heavier gages of band steel, up to 5c., which is being quoted by some makers able to supply all gages of hoops and bands. Almost no business is going on the books of these makers at present and those naming the higher figure hesitate about making reductions in

the fear of jeopardizing unfilled orders and also because they believe that a reduction, even of substantial proportions, would not be productive of orders. The Carnegie Steel Co. still is adhering to the old base of 3.05c.

Boiler Tubes.—Demand is almost negligible and the tendency of independent prices distinctly is lower despite the fact that there is a fair backlog of old orders on the books of most companies. Jobbers in this district appear to have rather heavy stocks of both steel and charcoal iron tubes, and as they are anxious to reduce their inventories, they are in many cases naming the carload discounts against less than carload lots. More business is going to the jobbers than to the mills at the moment because those who want boiler tubes at present want them shipped promptly. A large Eastern maker has taken business in 3½ to 4½-in. charcoal iron boiler tubes at 8 per cent off the list as against the former quotation of the list price. Discounts are given on page 1438.

Old Material.—There has been another severe break in prices since last reports and indications are lacking that even the new quotations are anything more than a temporary resting place on the way down. Not only are consumers holding up deliveries against contracts but they are showing absolutely no interest in the market, and with the dealers pretty well caught up on their contracts, the outlet for such tonnages as are coming upon the market rarely has been narrower. New quotations find little or no basis in sales and really are nothing more than an approximation of what might be obtained, if there was any business passing. The revision of prices to bring the market in line with present conditions involves reductions ranging from \$2 to \$6 per ton.

We quote for delivery to consumers' mills in the Pittsburgh and other districts that take Pittsburgh freight rates, as follows:

Heavy melting steel, Steubenville, Follansbee, Brackenridge, Monessen, Midland and Pittsburgh.....	\$20.00 to \$20.50
No. 1 cast cupola size.....	29.00 to 30.00
Rerolling rails, Newark and Cambridge, O.; Cumberland, Md., Franklin, Pa., and Pittsburgh....	29.00 to 30.00
Compressed sheet steel.....	18.00 to 19.00
Bundled sheet sides and ends, f.o.b. consumers' mills, Pittsburgh dist.	12.50 to 13.00
Railroad knuckles and couplers.....	20.50 to 21.00
Railroad coil and leaf springs.....	20.50 to 21.00
Railroad grate bars.....	21.00 to 22.00
Low phosphorus melting stock, bloom and billet ends, heavy plates, ¼-in. and heavier.....	28.00 to 29.00
Railroad malleable.....	27.00 to 28.00
Iron car axles.....	48.00 to 49.00
Locomotive axles, steel.....	35.00 to 36.00
Steel car axles.....	32.00 to 33.00
Cast iron wheels.....	36.00 to 37.00
Rolled steel wheels.....	20.50 to 21.00
Machine shop turnings.....	12.50 to 13.00
Sheet bar crop ends (at origin).....	23.00 to 24.00
Heavy steel axle turnings.....	17.00 to 18.00
Short shovel turnings.....	15.00 to 16.00
Heavy breakable cast.....	25.00 to 26.00
Stove plate.....	24.00 to 25.00
Cast iron borings.....	15.00 to 16.00
No. 1 railroad wrought.....	24.00 to 25.00

Coke.—The Connellsville region has had poor car placements in the past two weeks and as a result shipments against contracts have suffered and the demand for spot tonnages has increased slightly. However, the demand has not run ahead of the supply to a point where higher prices have been possible. The spot market on furnace coke still is quotable at from \$8 to \$8.50 per net ton, oven, and for spot tonnages of 72-hr. fuel \$9 to \$9.50 still is the general range. The effect of the car shortage has been to stay the decline in prices rather than to bring about any real strength. In addition to light car placement, the movement of coke has been impeded by a shortage of motive power on the Monongahela Railroad, which in the past week has been obliged to send a large number of locomotives to the repair shop. Nothing yet has developed in connection with contracts for the first half of 1921, although it is reported that a substantial tonnage of furnace coke was contracted for about two weeks ago on a graduated sliding scale arrangement, which is said to figure out about 4½ to 1 of Valley basic pig iron.

Judge Gary's Statement Concerning Price Policy of the United States Steel Corporation

The following statement was issued by Elbert H. Gary, chairman, United States Steel Corporation, last Friday:

"Our subsidiary companies have consistently and uninterruptedly maintained the base selling prices of all iron and steel commodities which were mutually fixed by representatives of the iron and steel interests of the United States and representatives of the Government on March 21, 1919.

"Since that time, producing costs of all manufacturers of iron and steel (including an advancement of wage rates aggregating \$51,000,000 per year to the Steel Corporation; and larger freight rates) have materially increased. Under usual circumstances, we would be justified in making additions to the average base prices.

"However, after deliberate and careful consideration we have decided to recommend to the presidents of our subsidiary companies that the present base selling prices of all commodities continue in force unless and until it becomes necessary and proper to make changes to meet altered conditions.

"We think stability in business is of the highest importance and that every man, to the extent of his opportunity and ability, and even at some sacrifice, is obligated to assist in stabilizing and maintaining prices on a fair and sane level. The producer, consumer and workman will be benefited by this attitude."

Nov. 19, 1920.

BLAST FURNACE RATING

Difference of Opinion as to Action of Southern Ohio Pig Iron Association

The regular bi-monthly meeting of the Southern Ohio Pig Iron and Coke Association was held at the offices of the Ashland Steel Co., Ashland, Ky., Nov. 16.

The principal business was the appointment of committees for the coming year, and a further discussion of the association's recent ruling as to blast furnace rating. In connection with the question of blast furnace rating, many letters and telegrams were received, and some of these took exception to the association's findings. That this subject is now being more generally discussed is evident from the number of letters from prominent men in the iron industry, one letter stating that "your ruling has introduced this matter in an entirely different manner from that in which we have been accustomed to thinking of it," and another, in which exception was taken to the ruling, stated "that there is hardly any big blast furnace (in the Pittsburgh district) to-day which would not be making 600 tons of iron a day according to this ruling." Criticisms of other methods of rating furnaces were also received. The members of the association feel, however, that they are on the right track, and they have many reports from furnaces in Ohio and the West which are burning 60 lb. of coke per cu. ft. of working volume in 24 hr. To cite one instance, exceptionally good work has been done in furnaces burning as high as 68 lb. of coke per cu. ft. of working capacity in 24 hr., the results being secured over a period of nine months. Further information will be sought by the committee on furnace rating, which is extremely anxious to gather all data pertaining to this question.

The traffic committee of the association reported on several matters referred to it, and recommended that no action be taken at this time. The committee reported that new demurrage charges by railroads will be effective Dec. 1.

A resolution of sympathy on the death of George Loudon, of the Jackson Iron & Steel Co., was adopted. Seven new members were elected.

President Sweetser announced the following committees for the ensuing year:

Blast Furnace Rating—C. R. Peebles, E. L. Ives, W. M. Jeffreys.
Traffic—S. S. Bridgers, J. W. Paton, A. E. Singelton, J. L. Roney.

Meetings—Chas. H. Hickok, W. G. Sharp, W. W. Stevenson.

Sampling and Analysis—W. P. Daines, H. C. Pierce, J. B. Rogers.

Membership—J. H. Briscoe, Carl Steinbacher, I. D. Huestis, Reports and Records—P. G. Wielander, J. E. Thropp, Jr., Carl Grave.

Wages and Hours of Work—N. G. Spangler, W. R. Knapp, J. F. Savage.

Coal Analysis and Preparation—A. R. Tillinghast, S. S. Bridgers.

The next meeting of the association, the mid-winter meeting, will be held at the offices of M. A. Hanna & Co., Cleveland, at a date to be announced later.

The members of the association and their friends were the guests of the Ashland Fire Brick Co. on an inspection trip to the company's clay mines and plant at Hayward, Ky. The party was conveyed to the mines by a special train, and was accompanied by President W. B. Seaton, General Manager E. H. Gartrell, Assistant General Manager J. C. Purtell, and Treasurer E. M. Weinfurter. C. C. Means, one of the directors, also accompanied the party. The Gartrell mine, opened about eight years ago, was visited, and the method of extracting the clay explained by the officials. The vein in this mine averages 7 ft. in thickness without a fault, and it is claimed to be one of the best deposits in the country. After the inspection caps and acetylene lamps used by the visitors were presented to them as souvenirs of the occasion. Following a dinner at the homes of the company officials, the visitors were shown through the Hayward brick-making plant, which has a capacity of 28,000 bricks per day.

In the evening the visitors were entertained at dinner at the Ventura Hotel, Ashland, by the Semet-Solvay Co. A. R. Tillinghast, district manager, presided, and exhibited photographs of the first coke ovens constructed by his company at Syracuse, N. Y., in 1892. Mr. Tillinghast traced the development of coke making from that time to the present, and also outlined what he felt would be the lines this development would take in the future, when high-grade coals were not available. Speeches were made by a number of others, dealing with the iron business, past, present and future.

Weirton Plant Operating

PITTSBURGH, Nov. 23.—The new steel works of the Weirton Steel Co. is completed and in operation. The first heat of steel from one of the new 100-ton open-hearth furnaces was cast Nov. 22. A cast from another unit will be run to-day. Two other furnaces are being fired and it is expected that five of the seven furnaces will be making steel by the end of the month. Rolling mills will start Saturday.

Chicago

CHICAGO, Nov. 23.

The past week has seen further curtailment in furnace and mill operation in this district. In addition to the Federal merchant furnace which blew out about 10 days ago the old plant of the Iroquois Iron Co., consisting of two small furnaces, has been shut down. The rail carbon steel bar mills of the Calumet Steel Co. and the Inland Steel Co. at Chicago Heights, and the Republic Iron & Steel Co. at Moline, have also suspended operation. In other respects, the situation is unchanged, the leading steel interest still running at 85 per cent of normal, the Indiana Harbor plant of the Inland Steel Co. at about 50 per cent and the Wisconsin Steel Works at 90 per cent. The wire plants in this section are operating full blast and the bar iron mills still have about a month's work ahead.

The structural steel market, which has been quiet for months, comes into prominence this week because of the placing of two large tonnages, 8800 tons for the local Federal Reserve Bank and 3500 tons for the Keith Theater, Cleveland. The Morava Construction Co., Chicago, has the fabricating contract for the bank and the American Bridge Co. will do the work for the theater. In both instances the leading steel interest will furnish the steel.

Judge Gary's announcement regarding prices was not sufficiently definite, in the opinion of local observers, to clarify the policy which will be pursued by Corporation mills. The qualification to the effect that prices might be changed to meet altered conditions, it is pointed out, leaves the consumer as much in the dark as heretofore. Should the subsidiaries open their books for first quarter contracts at present prices, which seems a logical step, the market will then feel the stabilizing influence which it was expected would follow Judge Gary's announcement.

The pig iron market is so quiet that even resale material offered at marked concessions under producers' quotations is finding few buyers. No effort is being made by furnaces to compete with resale offerings and the general policy of producers throughout the country seems to be to blow out rather than to pile iron at present high costs. One element of cost, fuel, is now in the process of readjustment. Labor is expected to follow, although no steps have been taken in that direction as yet. Foundry operations throughout this territory are curtailed and this is the explanation for resale offerings and efforts to cancel and secure extensions on shipments. Furnaces generally are taking a stand against cancellations, believing it is only fair that the consumer observe his obligations in a declining market if the producer gives him the protection of a contract in a rising market.

Coke prices are weak and ill defined as a result of the recent sharp decline in consumption. Although even lower prices are reported, the range on good grades of beehive foundry coke is from \$9.50 to \$10.50, Connellsville. The local by-products producer has reduced its quotation on foundry coke from \$18 to \$17, ovens.

Pig Iron.—The market is to such a degree a stalemate that even resale material offered at marked concessions under furnace quotations is finding practically no buyers. The inquiry for 750 tons of malleable for first quarter shipment mentioned a week ago has been withdrawn, as has an inquiry for 300 tons of 10 per cent Bessemer ferrosilicon. Such inquiries as are appearing are largely in the nature of feelers to determine the trend of the market. Even the dullest market is not devoid of activity and it is in that light that one must consider an inquiry for 500 tons of malleable which is expected to be issued before the end of the week. With many consumers anxious to reduce their inventories and few in the market for additional tonnage, it is even difficult to ascertain a level for resale prices. Occasionally a melter in urgent need of cash will offer iron at the price at which he bought it, though that price be considerably below furnace quotations or the ruling resale quotations. These instances are as yet exceptional and in the present absence of market ac-

tivity can hardly be taken as indicating the true level of prices. An instance of this sort was the resale of 300 tons of 10 per cent Bessemer ferrosilicon at the equivalent of \$53, Chicago. In this connection it is to be noted that higher silicon irons, silveries included, are very weak and that electrolytic furnaces have been making efforts to compete with resale offerings. On the other hand, blast furnaces generally are not only making no effort to secure business under present conditions but are blowing out rather than pile iron at high costs. Although producers in the South and East first curtailed their operations, local furnaces are commencing to respond to the influences of the time. Last week the blowing out of one Federal furnace was noted in this column. Since then two of the smaller Iroquois furnaces have gone out. In the face of insistent efforts on the part of melters to secure releases from contracts, furnaces generally are taking a stand against cancellations. The producers cannot see the logic of protecting buyers against advances by granting them contracts and releasing them the moment the market declines. No change has been made in the appended quotations, which, although they largely represent resale offerings are hardly more than nominal in view of the paucity of trading.

The following quotations are for iron delivered at consumers' yards except those for Northern foundry, malleable and steel-making irons, including low phosphorus, which are f.o.b. furnace and do not include a switching charge averaging 79c. per ton.

Lake Superior charcoal, averaging sil.	
1.50 (other grades subject to usual	
differentials), deliv. at Chicago...	\$53.50 to \$58.50
Northern coke, No. 1 sil. 2.25 to 2.75...	42.25 to 45.25
Northern coke foundry, No. 2, sil.	
1.75 to 2.25.....	40.00 to 43.00
Northern high phos.....	40.00 to 43.00
Southern coke, No. 1 foundry and No.	
1 soft, sil. 2.75 to 3.25.....	47.67 to 49.67
Southern coke, No. 2 foundry, sil.	
2.25 to 2.75.....	45.92 to 47.92
Southern foundry, sil. 1.75 to 2.25...	44.67 to 46.67
Malleable, not over 2.25 sil.....	40.50 to 43.50
Basic	40.00 to 43.00
Low phos. Eastern furnace (copper	
free)	50.00
Silvery, 7 per cent.....	55.32 to 58.32

Plates.—Notwithstanding the fact that Judge Gary's statement regarding prices was generally taken to mean that no change will be made in present quotations, the local subsidiary has not opened its books for first quarter contracts and continues to pursue its former policy of accepting orders when accompanied by specifications. It is the feeling of the trade, however, that the acceptance of first quarter contracts on the present basis would be the logical step to take, and it is possible that an announcement to that effect will be forthcoming at an early date. In other respects, the market is without feature. The foremost local independent continues to quote the Corporation price on orders accompanied by specifications, whereas most of the other mills adhere to a price of 3c., base, Pittsburgh. Some railroad car business is pending, but none of it has developed into orders.

The mill quotation is 2.65c. to 3c., Pittsburgh, the freight to Chicago being 38c. per 100 lb. Jobbers quote 3.78c. for plates out of stock.

Ferroalloys.—The market is quiet, but such transactions as have occurred indicate a weakening tendency in resale prices. It is evident that resale spiegeleisen is available at \$60 to \$65 delivered.

We quote 75 to 80 per cent ferromanganese; resale, \$150 to \$160, delivered; 50 per cent ferrosilicon at \$80 to \$85, delivered; spiegeleisen, 18 to 22 per cent, resale, \$60 to \$65, furnace.

Structural Material.—The feature of the market lies in the placing of 8800 tons for the local Federal Reserve bank. The fabricating award went to the Morava Construction Co., and the steel will be furnished by the Illinois Steel Co. The competition on this job was very keen, in view of the attractive tonnage involved, and it is reported that the fabricating bids were on a close basis. The contract for the Keith Theater and office building, Cleveland, which was handled by local architects, was awarded to the American Bridge Co. This project is also of unusual size, involving 3500 tons.

The fabrication of tanks and structural steel sets for the Continental Oil Co., Denver, involving 276 tons, has been let to the Graver Tank Corporation, and 325 tons for the Standard Oil Co. office and warehouse, Milwaukee, erroneously reported as awarded last week, has finally been let to the Lackawanna Bridge Co. The Wisconsin Bridge & Iron Works will fabricate 300 tons for a bridge at Laredo, Texas. Among pending projects, the Cadillac Theater, Evansville, Ind., will require 400 tons. The Racine, Wis., Board of Public Works is asking bids until Dec. 18 on a bascule bridge at State Street.

The mill quotation is 2.45c. to 3c., Pittsburgh, which takes a freight rate of 38c. per 100 lb. for Chicago delivery. Jobbers quote 3.58c. for materials out of warehouse.

Sheets.—Neither of the local producers is taking first quarter contracts and quotations by outside independents are still ill defined. One mill will accept immediate specifications on the basis of 6.25c. base, Pittsburgh, on galvanized, 4.50c. on blue annealed and 5.50c. on black. These represent the minimum quotations reported in this district up to the present time.

Mill quotations are 4.35c. to 5.50c. for No. 28 black; 3.55c. to 5c. for No. 10 blue annealed, and 5.70c. to 7.25c. for No. 28 galvanized, these all being Pittsburgh prices, subject to a freight to Chicago of 38c. per 100 lb.

Jobbers quote: Chicago delivery out of stock, No. 10 blue annealed, 6.13c.; No. 28 black, 7.10c.; No. 28 galvanized, 8.60c.

Bars.—The situation as regards independent quotations on mild steel bars is unchanged. The leading local independent continues to ask 3c., base, Chicago, while most other mills are adhering to 3c., base, Pittsburgh. Although a few independents are understood to have quoted as low as the Corporation price on occasion, none has yet taken such action as a consistent policy. In view of the slack demand, it is regarded unlikely that the price situation will clarify for some time. Neither the leading interest nor the foremost local independent has opened its books for first quarter contracts. Bar iron demand is slight and mills are still working against old commitments. The Republic, Calumet and Inland Rail carbon steel bar mills are idle because of lack of business.

Mill prices are: Mild steel bars, 2.35c. to 3c., Pittsburgh, taking a freight of 38c. per 100 lb.; common bar iron, 3.75c., Chicago; rail carbon, 3c. to 3.50c. mill.

Jobbers quote 3.48c. for steel bars out of warehouse. The warehouse quotation on cold rolled steel bars is 5.90c. for rounds and 6.40c. for flats and squares, an extra of 15c. per 100 lb. applying to orders exceeding 1000 lb. and under 2000 lb. and an extra 35c. on orders up to 1000 lb. Jobbers quote hard and medium deformed steel bars at 3.48c. base.

Wire Products.—Of all iron and steel commodities wire products have been least affected by current business reaction. The demand for wire nails and barbed wire is unabated and the call for plain wire by manufacturers is still heavy, though not so great as a few months ago. Even the leading producer is receiving a few cancellations and requests for extensions, but the tonnage involved is relatively so small as to be practically negligible. Its mills throughout the country are operating full with prospects of continuing at that rate indefinitely. While the day of extreme premiums for spot material has passed, independent producers apparently have bookings ahead and have done little as yet to close the gap between their quotations and those of the principal producer. For mill prices see finished iron and steel f.o.b. Pittsburgh, page 1439.

Rails and Track Supplies.—Although Judge Gary's announcement on prices was taken to mean that there will be no change from present quotations, the prices to govern on rail contracts for 1921 have not yet been fixed by the local subsidiary. The demand for track accessories for prompt shipment is light.

Standard Bessemer rails, \$45 to \$55; open-hearth rails, \$47 to \$57. Light rails, 2.45c. to 3c., f.o.b. makers' mills. Standard railroad spikes, 3.65c. to 4c., Pittsburgh. Track bolts with square nuts, 4.60c. to 5c., Pittsburgh. Steel tie plates, 3c. to 3.50c. and steel angle bars, 2.75c., Pittsburgh and Chicago; tie plates, iron, 3.75c. f.o.b. makers' mills.

Cast Iron Pipe.—Saginaw, Mich., will take bids Dec. 7 on 200 tons for a river crossing. The Santa Fe is inquiring for about 100 tons. In view of the slack demand, pipe shops are rapidly running out of work. The leading interest has closed one of its plants and it is probable that others will be shut down soon. It is

to be noted in this connection, however, that a shut-down of two weeks at this season is not unusual in this industry.

We quote per net ton f.o.b. Chicago, ex-war tax as follows: Water pipe, 4-in., \$88.10; 6-in. and above, \$88.10; class A and gas pipe, \$4 extra.

Railroad Rolling Stock.—The Minneapolis & St. Louis is inquiring for 500 box cars and the Cincinnati, Indianapolis & Western for 300 gondola cars. The Wheeling & Lake Erie contemplates the purchase of 3000 cars. The Los Angeles & Salt Lake has ordered 10 mikado type locomotives from the American Locomotive Co. and four switch engines from the Baldwin Locomotive Works. The Gulf Coast Lines have purchased five engines from the American Locomotive Co.

Bolts and Nuts.—Although the period of cancellations and suspensions seems about over, it is notable that the most recent cancellations have been received from a large agricultural implement company which heretofore had seemed immune to the effects of the present business depression. Prices are not well defined, but apparently concessions are more frequent on large bolts than on smaller sizes. The Burlington railroad has withdrawn an inquiry for about 300,000 large bolts. The range of prices in this district is appended. On commodities not mentioned below, the quotations as given on page 1438 govern.

Manufacturers quote: Large structural and ship rivets, \$4.50 to \$4.85; large boiler rivets, \$4.60 to \$4.95; small rivets, 25 to 60 per cent off; small machine bolts, rolled threads, 40 and 5 off; cut out threads, 30 and 10 off; longer and larger sizes, 30 off; carriage bolts, ½-in. by 6-in., smaller and shorter rolled threads, 30 and 10 off; cut threads 30 off; longer and larger sizes, 25 to 40 off; lag bolts 45 to 45 and 5 off; plow bolts, Nos. 1, 2 and 3 heads, 30 off to 50 and 5 off; other style heads, 25 per cent to 20 per cent extra; hot pressed square and hexagon blank nuts, \$1.75 to \$2 off list; tapped nuts, \$1.25 to \$1.75 off list; tire bolts, 50 per cent off to 60 and 10 per cent off; track bolts, 6c. to 7c. base. All prices carry standard extra f.o.b. Pittsburgh.

Jobbers quote structural rivets, 5.08c. to 5.73c.; boiler rivets, 5.18c. to 5.83c.; machine bolts up to ¾ x 4 in., 30 per cent off; larger sizes, 20 off; carriage bolts up to ¾ x 6 in., 20 off; larger sizes, 15 off; hot pressed nuts, square tapped and hexagon tapped, list price; blank nuts, list price; coach or lag screws, gimlet points, square heads, 40 per cent off. Quantity extras are unchanged.

Old Material.—With the market stagnant, sporadic sales, limited trading among dealers and purchases from railroads indicate that prices are soft and downward in tendency. Until there is a real resumption of buying the appended quotations are to be regarded as nominal, as there is no doubt that a revival of interest would serve to stimulate prices upward again. For the time being, however, users are marking time with the probability that the level from which prices will finally recover will be even lower than the present one. The Illinois Central offers 9000 tons, the Burlington 6000 tons, the Soo Line 500 tons and the New York Central a blind list.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton	
Iron rails	\$27.00 to \$27.50
Relaying rails	45.00 to 50.00
Car wheels	32.50 to 33.00
Steel rails, rerolling	20.50 to 21.00
Steel rails, less than 3 ft.	19.50 to 20.00
Heavy melting steel	17.50 to 18.00
Frogs, switches and guards, cut apart	17.50 to 18.00
Shoveling steel	17.00 to 17.50
Low phos. heavy melting steel	22.00 to 22.50
Drop forge flashings	13.00 to 13.50

Per Net Ton	
Iron angles and splice bars	27.50 to 28.00
Steel angle bars	17.00 to 17.50
Iron arch bars and transoms	29.00 to 29.50
Iron car axles	36.00 to 36.50
Steel car axles	20.50 to 21.00
No. 1 busheling	15.50 to 16.00
No. 2 busheling	10.00 to 11.00
Cut forge	16.00 to 16.50
Pipes and flues	11.00 to 11.50
No. 1 railroad wrought	16.00 to 16.50
No. 2 railroad wrought	16.00 to 16.50
Steel knuckles and couplers	18.00 to 18.50
Coil springs	20.00 to 20.50
No. 1 cast	21.50 to 22.00
Low-phos. punchings	18.00 to 18.50
Locomotive tires, smooth	12.00 to 13.00
Machine shop turnings	8.00 to 8.50
Cast borings	10.50 to 11.00
Stove plate	22.00 to 22.50
Grate bars	16.00 to 16.50
Brake shoes	13.50 to 14.00
Railroad malleable	19.00 to 19.50
Agricultural malleable	18.50 to 19.00
Country mixed	11.00 to 12.00

Boston

BOSTON, Nov. 23.

Pig Iron.—If such a thing is possible, the market is quieter than it was last week. Many foundries have on hand or due them iron they desire to sell either direct or through regular channels, but so many are in the same position it is only occasionally that actual sales are made and then usually in car lots. Prices, are largely a matter of hearsay and are difficult to determine. For instance, we hear of a car of Virginia offered at \$44 furnace base, silicon 1.75 to 2.25, of another car No. 2 X sold at \$48 delivered, and one foundry claims it can buy any grade desired at \$35 delivered base. Resale 1920 and 1921 Temple iron is offered at \$43 furnace base, and Buffalo at \$40 and \$42. There has not been enough activity in resale eastern Pennsylvania and Alabama to hazard even a guess on prices. In other words, resale prices on such irons are purely nominal. One hears less of cancellations, but more of requests for deferred iron shipments. Bright spots can be found, yet foundries as a whole are less active, many melting only every other day or three days a week. Delivered pig iron prices follow:

Eastern Pa., sil. 2.25 to 2.75.....	\$48.31 to \$49.31
Eastern Pa., sil. 1.75 to 2.25.....	47.06 to 48.06
Buffalo, sil. 2.25 to 2.75.....	46.71 to 48.41
Buffalo, sil. 1.75 to 2.25.....	45.46 to 47.46
Virginia, sil. 2.75 to 3.25.....	51.58 to 53.58
Virginia, sil. 2.25 to 2.75.....	49.83 to 51.83
Virginia, sil. 1.75 to 2.25.....	48.53 to 50.58
Alabama, sil. 2.75 to 3.25.....	52.66 to 55.66
Alabama, sil. 2.25 to 2.75.....	50.91 to 53.91
Alabama, sil. 1.75 to 2.25.....	49.66 to 52.66

Coke.—Additional sales of Connellsville coke are reported, but the market for that and the New England product is limited. Prompt delivery Connellsville foundry coke has sold at \$11 and \$10.50 f.o.b. ovens, or \$17.20 and \$16.70 delivered, mostly \$10.50, as compared with \$19.20 delivered, the New England Coal & Coke Co. price where the freight does not exceed \$3.40. Seventy-two hour Connellsville coke is offered as low as \$9.25 ovens, or \$15.45 delivered. Foundries are not anxious for coke and are inclined to hold off 1921 contracts until a definite Connellsville market for that period has been established.

Old Material.—A further shrinkage in going business, increased rejections, especially of cast, and additional cancellations have made for continued weakness in quotations on old material. Dealers have cleaned up the major portion of contracts, but at least one house is buying blast furnace borings and turnings for a Pennsylvania mill at \$11.50. On other turnings the market is 50c. lower in sympathy with old material prices in general. Dealers' ideas on No. 1 machinery cast vary, but the market unquestionably is lower and stove plate also is cheaper than it was a week ago. Some dealers will not pay more than \$1.25 per 100 lb., which with freight and commission, figures out \$28 to \$28.50 delivered, while others feel the market is nearer \$33 delivered. Actual sales are reported at \$32 and \$33. The top on the stove plate market is about \$21, as against \$22 a week ago. Cotton ties are not wanted at any price. Old material prices as quoted at the local yards follow:

No. 1 heavy melting steel.....	\$13.50 to \$14.50
No. 1 railroad wrought.....	20.00 to 21.00
No. 1 yard wrought.....	17.00 to 18.00
Wrought pipe (1-in. in diameter, over 2 ft. long).....	14.00 to 15.00
Machine shop turnings.....	11.50 to 12.00
Cast iron borings.....	14.00 to 15.00
Heavy axle turnings.....	11.50 to 12.00
Blast furnace borings and turnings..	8.50 to 9.00
Forged scrap.....	10.00 to 10.50
Bundled skeleton.....	10.00 to 10.50
Street car axles.....	26.00 to 27.00
Car wheels.....	32.00 to 33.00
Machinery cast.....	32.00 to 33.00
No. 2 cast.....	20.00 to 21.00
Stove plate.....	20.00 to 21.00
Railroad malleable.....	24.00 to 25.00
Rerolling rails.....	23.00 to 24.00

Warehouse Business.—Local warehouse prices on iron and steel have again been revised downward, the decline averaging 50c. to \$1 per 100 lb. Increased mill

shipments, free offerings of steel by metal working industries, noticeably the machine tool builders, further revising of mill contracts taken at 4c., to 3.25c. f.o.b. Pittsburgh, and a decrease in the demand were the factors governing the new warehouse prices. Stocking of the local Carnegie warehouse, which has been empty for many months, has begun, approximately 10 per cent of a normal stock being on hand. Local jobbing quotations on coach screws are 10 to 15 per cent lower, on machine bolts 10 per cent, and on washers and nuts 1c. per lb.

Jobbers now quote: Soft steel bars, \$4.15 per 100 lb. base; flats, \$4.65 to \$5; concrete bars, \$4.15 to \$4.40; tire steel, \$5.50 to \$6; spring steel, open hearth, \$8.50; crucible, \$14; steel bands, \$5.50 to \$6.25; steel hoops, \$8; toe calk steel, \$7; cold rolled steel, \$7 to \$9.50; structural, \$4.15 to \$5.50; plates, \$4.15 to \$4.60; No. 10 blue annealed sheets, \$6.15; No. 28 black sheets, \$8.15; No. 28 galvanized sheets, \$9.50; refined iron, \$5 to \$6; best refined, \$7; Wayne, \$9; band iron, \$5.50; hoop iron, \$8; Norway iron, \$15.

Buffalo

BUFFALO, Nov. 23.

Pig Iron.—The market continues stagnant. The only activity noted is in resale iron. Transactions approximating 500 tons were noted during the week. A local producer returning from a trip in Canada stated the market was livelier there. For furnace iron the Canadian market is \$50, not including exchange. At all local furnaces the rule is that existing contracts will not be cancelled but that shipment can be deferred.

Coke.—There is very little interest shown by consumers. All seem to be covered for the near future requirements. Foundry is ranging from \$10.50 to \$13. Furnace is about \$3 less.

We quote f.o.b. Buffalo, as follows:

No. 1 foundry, 2.75 to 3.25 sil.....	\$43.00 to \$48.25
No. 2 X foundry, 2.25 to 2.75 sil.....	41.25 to 44.50
No. 2 plain, 1.75 to 2.25 sil.....	40.00 to 43.25
Basic.....	38.00
Malleable.....	42.00
Lake Superior charcoal.....	58.00

Finished Iron and Steel.—The three-cent price asked by independent producers seems to be steady despite the announcement by the Steel Corporation within the week that no change in prices would be made. Mills are anxious to ship tonnage now on books, and contracted for at from 3c. to 4c. Effect of the announcement cannot be estimated at this time. Demand for all classes of finished product is exceptionally light. Exceptions to this rule is the demand for wire and pipe, especially from the oil producing sections. One mill reports a good-sized tonnage of billets placed last week. A standard rail mill has been adding steadily to its commitment. The car situation is good. The Interstate Commerce Commission having removed all restrictions, mills are able to make regular shipment. Two or three small structural jobs are reported. The Buffalo Structural Steel Co. will fabricate 80 tons for the Niagara Electro-Chemical Co. of Niagara Falls, N. Y.

Warehouse prices f.o.b. Buffalo are: Steel bars, 4.65c.; shapes, 4.15c.; plates, 4.30c.; No. 10 blue annealed sheets, 7.15c.; No. 28 black sheets, 8.50c.; No. 28 galvanized sheets, 10.60c.; hoops, 6.60c.

Old Material.—There is no buying or selling even among dealers. The reduction in the price of heavy melting steel made little difference in the market. Mills are not in the market for any tonnage. Stove plate and cast scrap were particularly affected by the drop.

We quote dealers' asking prices per gross ton, f.o.b. Buffalo as follows:

Heavy melting steel, regular grades..	\$19.00 to \$20.00
Hydraulic compressed.....	17.00 to 18.00
Low phos., 0.04 and under.....	30.00 to 31.00
No. 1 railroad wrought.....	26.00 to 27.00
No. 1 machinery cast.....	30.00 to 31.00
Iron and steel axles.....	35.00
Car wheels.....	30.00 to 31.00
Railroad malleable.....	23.00 to 24.00
Machine-shop turnings.....	12.00 to 13.00
Heavy axle turnings.....	17.00 to 18.00
Clean cast borings.....	17.00 to 18.00
Iron rails.....	23.00 to 24.00
Locomotive grate bars.....	20.00 to 21.00
Stove plate.....	23.00 to 24.00
Wrought pipe.....	16.00 to 17.00
No. 1 busheling.....	16.00 to 17.00
Bundled sheet stampings.....	12.00 to 13.00

Cincinnati

CINCINNATI, Nov. 22.

Pig Iron.—The largest inquiry before the trade during the past week was from a central Ohio melter for 250 tons of foundry iron, silicon 2.75 to 3.25. Some southern Ohio furnaces are reported to have quoted \$42, base, or \$45 on the grade wanted. Resale iron at \$40, or \$37, base, was offered the inquirer by a local selling agency, and it is reported that even better offers were received. Two small inquiries for malleable iron are also being figured on, and it is reported that the lowest price quoted by furnaces was \$42.50. Resale iron continues to dominate the market, but with lower prices being quoted by furnaces this iron is becoming more difficult to dispose of except at losses to the sellers. The principal part of this iron was purchased at \$40 or over per ton, and there is an increasing tendency on the part of offerers to accept what they can get for it and charge the losses to this year's operations. It is reported that a number of Southern furnaces are willing to take on business at \$38, base, but two big producers who have considerable iron sold for first half delivery still hold to the \$42 price. Resale Southern iron is available at \$38 in fairly large tonnages. There is no general disposition on the part of the furnace interests to compete with resale iron, and further curtailment of operations may be expected until this iron is absorbed. Requests for cancellations continue to be received, but the circumstances must be very extenuating before they are allowed. There is an evident intention on the part of the furnace interests to hold buyers strictly to their contracts and indications now are that some of these cases will be taken before the courts.

Based on freight rates of \$4.50 from Birmingham and \$2.52 from Ironton, we quote f.o.b. Cincinnati:

Southern coke, sil. 1.75 to 2.25 (base price)	\$42.50 to \$44.50
Southern coke, sil. 2.25 to 2.75 (No. 2 soft)	43.75 to 45.75
Ohio silvery, 8 per cent sil.	60.52
Southern Ohio coke, sil. 1.75 to 2.25 (No. 2)	44.52
Basic northern	39.52
Malleable (nominal)	46.02

Finished Material.—The market for finished materials is extremely quiet, and the tendency on the part of buyers seems to be to hold off all purchases until after the first of the year. Expectation of lower prices, which of course is in the minds of buyers, is to a large extent responsible for the dullness, but the fact that better shipments on old orders are now being received leaves the consumers in better shape than they have been for many months, and a number of them have sufficient stock now on hand to carry them well into the new year. Prices show material changes from those quoted last week. Plates, shapes and bars are being offered freely at 3c., and it is generally admitted that a desirable tonnage would be accepted by most mills at materially lower prices. The majority of the sales made in this district during the week were at the 3c. price, but reports are current that at least one mill is quoting 2.90c. on bars. A mill in the northern part of the State is understood to have offered galvanized sheets in the local market during the week at 6.70c., but no orders were placed. The plant of the Ashland Steel Co. at Ashland, Ky., is down for repairs, and the Andrews Steel Co. at Newport will be down for two weeks while repairs are being made to the electrical installations at the Newport Rolling Co.'s mills, the sheet bars for which are supplied by the Andrews company. Jobbers have reduced prices and now quote as follows:

Iron and steel bars, 3.75c. base; small angles, 4.15c.; hoops and bands, 13 gage and lighter, 5.50c. base; structural shapes, ¼-in. and heavier, 3.85c. base; reinforcing bars, 3.82½c. base; cold rolled rounds, 1½-in. and over, 5.75c.; under 1½-in. and flats, squares and hexagons, 6.25c.; No. 10 blue annealed sheets, 6.35c. base; black sheets, 28-gage, 8c.; galvanized sheets, 28-gage, 9c.; wire nails, \$4.50 per keg, base.

Coke.—While there is some Connellsville furnace coke offered at \$7.50, this is usually high in sulphur content, and standard coke is held at \$8. On foundry the range is \$8.50 to \$10. Wise County foundry is quoted at \$10 to \$11, and New River foundry \$12 to \$13.

Old Material.—The scrap market is extremely dull. The demand has subsided to almost negligible proportions. Sales during the week were made at from \$1 to \$2 under last week's levels. A local dealer purchased a considerable tonnage of heavy melting steel at \$14.50, and a sale of railroad wrought to a consumer was made at \$18.50 delivered. The whole list is appreciably weaker, with offerings more plentiful.

We quote dealers' buying prices:

Per Gross Ton	
Bundled sheets	\$9.50 to \$10.50
Old iron rails	22.50 to 23.50
Relaying rails, 50 lb. and up.	46.50 to 47.50
Revolving steel rails	25.50 to 26.50
Heavy melting steel	15.50 to 16.50
Steel rails for melting	18.50 to 19.50
Car wheels	30.50 to 31.50

Per Net Ton	
No. 1 railroad wrought	17.50 to 18.50
Cast borings	8.50 to 9.00
Steel turnings	6.00 to 6.50
Railroad cast	22.50 to 23.50
No. 1 machinery	25.50 to 26.50
Burnt scrap	18.50 to 19.50
Iron axles	31.00 to 31.50
Locomotive tires (smooth inside)	17.00 to 18.00
Pipes and flues	10.50 to 11.00
Malleable cast	18.50 to 19.00
Railroad tank and sheet	10.50 to 11.00

St. Louis

ST. LOUIS, Nov. 23.

Pig Iron.—Practically no business is making its appearance in the St. Louis market, as melters have about all they need and are disinclined to place any orders for the future until requirements of their contracts compel it. Furnace representatives are of the opinion that price cutting, even if it were undertaken, would do no good so far as stirring up new business is concerned and are therefore ready and willing to let the present situation rest until definite developments take place.

Finished Iron and Steel.—In finished products there has been no special change in the market. Mill representatives are taking such orders as can be rolled, but are not pressing for business as they are not yet in position to offer any special deliveries. For stock out of warehouse we quote as follows:

Soft steel bars, 3.57½c.; iron bars, 4.07½c.; structural material, 3.67½c.; tank plates, 3.87½c.; No. 10 blue annealed sheets, 6.22½c.; No. 28 black sheets, cold rolled, one pass, 8.20c.; No. 28 galvanized sheets, black sheet gage, 9.70c.

Old Material.—No trading has taken place in the scrap market the past week and dealers themselves are entirely out of the market, because of the existing uncertainties. They do not expect any developments now until following the holidays and inventories.

We quote dealers' prices, f.o.b. consumers' works, St. Louis industrial district, as follows:

Per Gross Ton	
Old iron rails	\$26.00 to \$26.50
Old steel rails, rerolling	20.00 to 20.50
Old steel rails, less than 3 ft.	18.00 to 18.50
Relaying rails, standard section, subject to inspection	40.00 to 45.00
Old car wheels	32.00 to 32.50
No. 1 railroad heavy melting steel scrap	16.00 to 16.50
Heavy shoveling steel	15.00 to 15.50
Ordinary shoveling steel	14.00 to 14.50
Frogs, switches and guards cut apart	16.00 to 16.50
Ordinary bundled sheet	9.50 to 10.00

Per Net Ton	
Heavy axle and tire turnings	\$10.00
Iron angle bars	\$25.00 to 25.50
Steel angle bars	34.00 to 34.50
Iron car axles	36.00 to 36.50
Steel car axles	23.00 to 23.50
Wrought arch bars and transoms	27.00 to 27.50
No. 1 railroad wrought	17.00 to 17.50
No. 2 railroad wrought	16.00 to 16.50
Railroad springs	15.00 to 15.50
Steel couplers and knuckles	16.00 to 16.50
Locomotive tires, 42 inches and over, smooth inside	14.00 to 14.50
No. 1 dealers' forge	13.00 to 13.50
Cast iron borings	8.00 to 8.50
No. 1 busheling	16.00 to 16.50
No. 1 boilers, cut to sheets and rings	11.00 to 11.50
No. 1 railroad cast scrap	24.00 to 24.50
Stove plate and light cast scrap	19.00 to 19.50
Railroad malleable	17.00 to 17.50
Agricultural malleable	16.00 to 16.50
Pipes and flues	11.50 to 12.00
Railroad sheet and tank scrap	10.50 to 11.00
Railroad grate bars	15.00 to 15.50
Machine shop turnings	6.00 to 6.50
Country mixed scrap	10.50 to 11.00
Uncut railroad mixed scrap	11.00 to 11.50
Horseshoes	18.50 to 19.00
Railroad brake shoes	15.00 to 15.50

Cleveland

CLEVELAND, Nov. 23.

Iron Ore.—Ore shipments fell off materially during the week. Loading at upper lake ports was slow, owing to ore being frozen, and many of the large freighters were taken out of commission. Many more boats will be tied up before the end of the week. The Pittsburgh Steamship Co. is laying up its small and medium-sized boats and during the past few days has sent back only its large freighters for ore. Shipments for the season will be well cleaned up this week, but if weather conditions permit, a few cargoes will be brought down during the first few days of December.

We quote delivered lower lake ports: Old range Bessemer, \$7.45; old range non-Bessemer, \$6.70; Mesaba Bessemer, \$7.20; Mesaba non-Bessemer, \$6.55.

Pig Iron.—Prices have continued their downward tendency, but lower quotations have not stimulated the demand. Following the sale of 500 tons of foundry iron by a Valley furnace at \$39, several furnaces have lowered their price to that basis, bringing their quotation more in line with prices asked for resale iron. One 200-ton lot sale was reported at \$39, which fairly represents the furnace price at the present time, although car lot sales by merchant furnaces are reported at \$37 and \$38. Locally the lowest quotation made by a furnace is \$38, but resale foundry iron is being offered in Cleveland as low as \$35. No inquiry has come out for basic iron which is being offered at \$35. The consumption of foundry iron shows no increase and some of the furnaces are piling iron in larger quantities than they have been. In some cases, one-half of the make is going on to furnace stock piles. The McKinney Steel Co. has blown out one of its four Cleveland stacks, which will be relined. Considerable low phosphorus resale iron is being offered at lower than furnace prices and furnaces, so far, are not meeting the resale price. Prices will be further tested on an inquiry from a Mansfield consumer for 250 tons of prompt shipment foundry iron. Resale Southern iron is being offered on the basis of \$37 for 1.75 to 2.25 silicon.

We quote delivered Cleveland as follows, based on the new freight rates, these being a 56c. switching charge for local iron, a \$1.96 freight rate from Valley points, a \$3.36 rate from Jackson and \$6.67 from Birmingham:

Basic	\$36.96
Northern No. 2 fdy., sil. 1.75 to 2.25.....	\$36.56 to 36.96
Southern fdy., 2.25 to 2.75.....	44.92 to 47.92
Ohio silvery, sil. 8 per cent.....	56.36 to 61.36
Standard low phos., Valley furnace.....	52.00 to 55.00

Semi-Finished Steel.—There is little activity in semi-finished steel, and prices are weak. On an inquiry for 3000 tons of sheet bars per month for the first quarter, a local mill quoted \$55, but was advised that a lower quotation had been made.

Finished Iron and Steel.—There appears to be more of a disposition by mills to meet the present situation by shading recent quotations. The demand continues very light, and during the week there were suspensions and cancellations of considerable low-priced steel. Among the suspensions was a round tonnage by a jobber. The Empire Rolling Mill Co.'s plant, Cleveland, is entirely shut down, and the Union Rolling Mill Co.'s plant is running at 50 per cent of capacity. The Cleveland Steel Co. resumed operations Tuesday after a two-week shutdown. The pressure of buyers to secure lower prices has caused a weakening in steel bar prices, and a test of the market was made on 400 tons of high carbon steel bars and angles just placed by a northern Ohio consumer. This order was divided among three mills on the basis of 2.905c., 2.955c. and 3c., Pittsburgh. The lowest price was made by a Chicago mill. A Chicago district mill is now understood to be offering steel bars at 2.35c., Pittsburgh, with the freight to Chicago added, making the price 2.73c., Chicago. For Cleveland delivery this would be equivalent to 2.82c., Pittsburgh. Most of the independent mills, however, are still adhering to the 3c. price on steel bars. The only change in the plate situation is the fact that some of the mills that have been adhering to 3c. now seem willing to reduce their price to 2.90c., or possibly lower, to get orders. A local mill which was one of the first to lower its prices has not gone below its 2.85c. mini-

mum quotation. The Ann Arbor Railroad is inquiring for 6000 tons of rails. In structural lines 3500 tons for Keith's Theater, Cleveland, is understood to have been placed in Chicago with the American Bridge Co.

Cleveland warehouses quote steel bars at 3.34c.; plates, 3.64c. and structural material, 3.44c.; No. 9 galvanized wire, 4.70c.; No. 9 annealed wire, 4c.; No. 28 black sheets, 7c. to 8c.; No. 28 galvanized, 9c. to 9.50c.; No. 10 blue annealed, 6c. to 6.50c.

Sheets.—An Ohio mill has reduced prices \$20 a ton on automobile sheets to 6.85c. for early shipment, with mills showing an eagerness to take on business. Prices on other grades of sheets continue to sag. On black sheets 5.50c., and on blue annealed sheets 4.50c. have become more general quotations. However, it is reported that a 5c. price has been named on black sheets and 4c. on blue annealed sheets in the heavy gages. Some plate mills are meeting the Steel Corporation's 3.55c. blue annealed price on No. 10. New low independent mill prices of 7c. to 7.25c. are being quoted on galvanized sheets.

Bolts, Nuts and Rivets.—Bolt and nut makers report some improvement in the demand both in specifications and new business. For a few weeks there had been virtually no new business and consumers evidently used up some sizes and are replacing these with small lot orders. Makers are two to three months behind on deliveries on small bolts, but can make prompt shipment on the large sizes. The rivet market is lifeless but some makers have orders on their books to keep them busy for several months, and consumers are asking for deliveries. There have been no recent cancellations. Prices are given on page 1438.

Coke.—Coke prices showed little change during the week. Standard Connellsville foundry coke is quoted at \$7.75 to \$8.50, although a small lot sale of a high grade is reported at \$10. There is a wide spread on quotations on foundry coke, ranging from \$9 to \$11.

Old Material.—With virtually no demand, scrap prices have further declined on nearly all grades, and the tendency is still downward. Heavy melting steel is being offered locally at \$19 to \$20 in round lots and can be bought at at least one outside point at \$18. Some of the dealers expect the price to reach \$15 before it strikes bottom. That the trade looks for a further decline on all grades is indicated by the fact that dealers are not buying scrap at present prices to place in their yard stocks. Trade is limited to small lot transactions between dealers. Only a few mills are taking material on contracts and consumers are not interested in low prices quoted on any grade of scrap they do not need. Many of the quotations are nominal, being based on market conditions and on prices at which other grades are moving rather than on actual sales at the prices named.

Dealers quote delivered to consumers' yards in Cleveland and vicinity, as follows:

Heavy melting steel.....	\$19.00 to \$19.50
Steel rails under 3 ft.....	22.00 to 23.00
Steel rails rerolling.....	22.00 to 23.00
Iron rails	22.00 to 23.00
Iron car axles.....	38.00 to 39.00
Low phos. melting scrap.....	23.00 to 24.00
Cast borings	14.50 to 15.00
Machine shop turnings.....	10.00 to 10.50
Mixed borings and short turnings.....	14.50 to 15.00
Short turnings for blast furnaces.....	14.50 to 15.00
Compressed steel	16.00 to 17.00
Railroad wrought	22.00 to 23.00
Railroad malleable	26.00 to 27.00
Steel axle turnings.....	15.00 to 15.50
Light bundled sheet stampings.....	10.00 to 11.00
Drop forge flashings over 10 in.....	10.00 to 11.00
Drop forge flashings under 10 in.....	10.00 to 11.00
No. 1 bushelings	13.00 to 14.00
Railroad grate bars	25.00 to 25.50
Stove plate	25.00 to 25.50
Cast iron car wheels.....	27.00 to 27.50
Pipes and flues.....	15.00 to 15.50

The Midvale Steel & Ordnance Co., Philadelphia, gave a special showing Tuesday, Nov. 23, of a number of motion picture films which have been taken of the manufacture of its various products, particularly wheels, naval guns, tool steel and charcoal iron tubes. The films will be available for showing at meetings of technical societies and conventions.

New York

NEW YORK, Nov. 23.

Pig Iron.—Dullness in the pig iron market continues, but there seems to be a slight improvement in sentiment and a prospect that some rather important melters will be compelled to come into the market for iron at a not far distant date. Inquiries for foundry coke, aggregating some 4000 tons, for delivery the last month of this year and the first quarter of next are taken as indications of fair activity of foundries. Furnaces as a rule continue to allow resellers to have a monopoly on any business that is appearing, but a sale of iron by a furnace on a basis of \$44, furnace, for No. 2 plain in eastern Pennsylvania is reported. Resellers have little regard for differentials and No. 2 X has been quoted only 75c. higher than No. 2 plain. On Buffalo iron \$40, furnace, seems to be the usual quotation and \$40 to \$41 on Virginia iron at furnace.

We quote for delivery in the New York district as follows, adding to furnace prices \$2.52 freight from eastern Pennsylvania, \$5.46 from Buffalo and \$6.16 from Virginia:

East. Pa., No. 1 fdy., sil.	2.75 to 3.25.	\$45.52 to \$46.52
East. Pa., No. 2X fdy., sil.	2.25 to 2.75.	44.25 to 45.25
East. Pa., No. 2 fdy., sil.	1.75 to 2.25.	43.52 to 44.52
Buffalo, sil.	1.75 to 2.25.	45.46 to 46.46
No. 2 Virginia, sil.	1.75 to 2.25.	46.16 to 47.16

Ferroalloys.—There is almost an entire absence of either inquiry or sales for ferromanganese or spiegel-eisen. Quotations are therefore nominal. Some American producers have reduced their asking price for ferromanganese from the basis of \$170, seaboard, to \$150, freight allowed, but no sales are reported. While the quotations for British ferromanganese still stands at \$170, seaboard, it is believed that when inquiry develops they will meet the domestic market. The quotation for spiegel-eisen, the high grade, has also declined and is now nominal at \$72.50, furnace. Stagnation practically characterizes the ferrosilicon market, the quotation for this being around \$80, furnace, for early and first half delivery.

Cast-Iron Pipe.—In normal times, this is a dull season of the year with pipe makers, and it is doubly so this year, due to the waiting policy of buyers. However, makers are sure that many large municipalities are in urgent need of pipe and will buy when they have evidences of market stability. Manufacturers are not expected to lower prices this year because they have enough orders to keep them busy through December; moreover, a lowering might cause ill feeling among those already tied up with contracts at present high prices. A substantial lowering of pig iron is bound to bring lower pipe prices, makers admit. East Orange, N. J., opened bids Monday for 100 tons of 8-in. pipe. We quote, f.o.b. New York, 6-in. and larger, \$77.22; 4-in., \$87.22; 3-in., \$97.22, with \$2 additional for Class A and gas pipe.

Finished Iron and Steel.—Customers of the Steel Corporation are getting shipments of steel much more freely as a result of the release of tight-bottom gondola cars by the Interstate Commerce Commission for general freight service. The extent of these shipments has undoubtedly been an embarrassment to some consumers, who have been engaged in an effort to work down their stocks prior to the approaching inventory period. With others it has resulted in a postponement of specifications against higher priced material from other makers. The local market is dull, there being few orders or inquiries. Such lots as are being placed are small. Independent mills continue their quotations of 3c., Pittsburgh, on plates, shapes and bars on the theory that not even a generous concession from this price would bring out a compensatory volume of orders. A firm offer of plate business could be placed at 2.90c. for prompt shipment. While the structural steel market does not gain in activity, so far as lettings are concerned, an Eastern fabricator reports having put in bids last week on several buildings totaling 12,000 tons, on which action is expected soon. A step in the direction of more activity in building work is the willingness of general contractors to take contracts on a lump sum instead of the cost-plus basis, which has been in effect

during the recent high-price era. The American Bridge Co. has taken 700 tons for grand stand and field stands at the Belmont race track. The Fidelity & Guaranty Bank Building, Baltimore, about 600 tons, which had been let to the Lehigh Structural Steel Co., has been given up by that bidder and will go to another company. No new railroad car business is reported, but the Louisville & Nashville is expected to place orders this week for 2000 55-ton hopper cars.

We quote for mill shipments, New York, as follows: Soft steel bars, 2.73c. to 3.38c.; plates, 3.03c. to 3.38c.; shapes, 2.83c. to 3.38c.; bar iron, flats, wider than 6 in., 5.38c., with half extras; light rounds, squares and flats, 5.88c., with full extras, and other sizes, 4.88c., with half extras.

Warehouse Business.—Prices are generally unchanged. Most warehouses in the city are carrying heavy stocks and local business is light. Waverly warehouse, Carnegie Steel Co., is now quoting on blue annealed sheets from No. 8 to No. 12 gage. Although the pipe market is still active, warehouses note a slight falling off in orders. The brass and copper situation is unchanged. We quote prices on page 1452.

High Speed Steel.—Although \$1.25 per lb. for 18 per cent tungsten high speed steel is maintained by most companies, the price is nominal. On orders of any size, prices have been made as low as \$1.10 and one transaction is reported at 90c. by a producer who wanted to reduce his inventory.

Old Material.—The market has been declining rapidly the past week, price changes being as great as \$6 a ton as in the case of rerolling rails. For instance, a few days ago 1000 tons of rerolling rails were purchased for \$28.25, delivered to eastern Pennsylvania, this price probably being at least as low as \$27 to-day. Heavy melting steel has declined \$2, \$16.50 to \$18 being obtainable delivered to eastern Pennsylvania. A broker recently offered \$13.75 for pipe, Brooklyn, but will pay no more than \$13.25 for the next purchase. A broker advises his buyers: "No buying has developed and it looks as though prices were going lower. Make all offers for shipment within ten days." One broker still offers \$18.50, eastern Pennsylvania, for heavy melting steel to fill an old contract.

Buying prices per gross ton, New York, follow:

Heavy melting steel	\$12.50 to \$13.50
Rerolling rails	22.00 to 23.00
Relaying rails, nominal	50.00 to 55.00
Steel car axles	21.00 to 22.00
Iron car axles	37.00 to 38.00
No. 1 railroad wrought	20.00 to 21.00
Wrought iron track	16.00 to 17.00
Forge fire	9.00 to 10.00
No. 1 yard wrought long	18.00 to 19.00
Light iron	7.00 to 8.00
Cast borings (clean)	14.50 to 15.00
Machine-shop turnings	11.00 to 11.50
Mixed borings and turnings	9.00 to 10.00
Iron and steel pipe (1 in. diam. not under 2 ft. long)	13.00 to 14.00
Stove plate	19.50 to 20.50
Locomotive grate bars	19.50 to 20.50
Malleable cast (railroad)	20.00 to 21.00
Old car wheels	31.00 to 32.00

Prices which dealers in New York and Brooklyn are quoting to local foundries, per gross ton:

No. 1 machinery cast	\$32.50 to \$33.50
No. 1 heavy cast (columns, building materials, etc.), cupola size	31.50 to 32.50
No. 1 heavy cast, not cupola size	24.00 to 25.00
No. 2 cast (radiators, cast boilers, etc.)	24.00 to 25.00

Birmingham

BIRMINGHAM, ALA., Nov. 23.

Pig Iron.—One Alabama merchant foundry yesterday sold two lots of 300 tons each at \$38 base. One was for export and the other for Middle Western delivery. The seller was prompted to accept \$38 on information that he had lost an order for 600 tons to the Pacific Coast because two other Alabama merchant interests had quoted at \$38 against his \$42. This is the first instance of merchant iron being openly sold and quoted at \$38. All at last agree that there is no longer a market, that \$42 is merely nominal and that resale iron can be had at from \$38 to \$40. The

hold-up orders have piled so that two makers admit that they are equivalent to 50 per cent of all orders on books. No effort is longer made to disguise the fact that there is extremely little buying. Great relief was felt when Judge Gary issued his statement to the effect that he would advise the Steel Corporation subsidiaries to maintain present price levels. This suggests an anchor at which to tie the receding prices. Many are of the opinion that but for this announcement some very low prices might have been forthcoming in finished materials and perhaps in pig iron. Slowing down of production continues. The Thomas Iron Co., Jenifer, followed the example of the Woodward Iron Co. in blowing out a stack. The Sloss-Sheffield Steel & Iron Co. for the present maintains a four-stack production. The Tennessee company of the Steel Corporation has resumed making foundry iron at one of the Bessemer stacks and is also operating six on basic and one on ferro-manganese. This is the normal quota of iron production of the past two years and is accounted for by the continued normal production of the finishing mills of the Tennessee company. Hold-up orders are especially numerous from the sanitary pipe shops and stove works. One large machine shop is down and others have slowed up, but sugar house contracts keep some going fairly well. General disposition is to accept the situation philosophically and sit by quietly until the market reshapes itself. This is not expected until well into the first quarter of 1921. Iron is accumulating on yards. The Gulf States Steel Co. has changed its furnace back to basic after a short run on foundry.

We quote per gross ton f.o.b. Birmingham district furnaces, the Tennessee company included, as follows:

Foundry, sil. 1.75 to 2.25.....	\$38.00 to \$40.00
Basic	37.00 to 39.00
Charcoal	58.00.

Cast Iron Pipe.—The water and gas pipe foundries are in fairly respectable state of operations on old business, but very little of the new has developed. The higher price schedule announced some time ago is not maintained. The only new business of consequence was an order for 1300 tons for Dayton taken by the American Cast Iron Pipe Co. Sanitary pipe shops are understood to be doing more or less price cutting.

Coal and Coke.—There is plenty of steam coal and coke for all industrial purposes. Low-grade steam coal does not find a ready market. Spot and contract steam coal are on the same base. Production has reached a point where the so-called mine strike might as well be called off. Standard foundry coke is available at \$12 and up.

Old Material.—The scrap market has sagged to still lower levels and even at that very little business is being done.

We quote per gross ton f.o.b. Birmingham district yards, prices to consumers, as follows:

Old steel rails.....	\$17.00 to \$18.00
No. 1 heavy steel.....	16.00 to 17.00
No. 1 cast.....	27.00 to 28.00
Car wheels	27.00 to 28.00
Tramcar wheels	25.00 to 26.00
No. 1 wrought.....	21.00 to 22.00
Stove plate	14.00 to 15.00
Cast iron borings.....	7.00 to 8.00
Machine shop turnings.....	7.00 to 8.00

Philadelphia

PHILADELPHIA, Nov. 23.

The Interstate Commerce Commission order permitting the use of all tight-bottom gondola cars for the movement of freight other than coal has brought about a large increase in shipments of steel products from the mills of the Steel Corporation subsidiaries in the Pittsburgh-Youngstown district. It is freely predicted that this increase in the supply of steel in the hands of consumers will place the Steel Corporation in a position within the near future to make promises of fairly prompt shipments on some rolled steel products.

The local market continues extremely quiet. Independent steel mills adhere to their quotations of 3c., Pittsburgh, on plates, shapes and bars, but there is

not enough business to encourage any mill to shade this price.

Pig iron producers are engaged in meeting a large number of requests for cancellations. While cancellations are not being permitted, the furnaces are obliged in most instances to accept suspensions of shipment. In some cases, sales agents have agreed to try to resell the iron for their customers. This has resulted in offerings of resale iron greatly exceeding the very slight demand.

Pig Iron.—Consumers of pig iron, particularly foundry grades, are making many requests for cancellations, which are without exception, sellers say, being denied. Frequently sales offices agree to make an effort to resell the iron and this has brought increased offerings of resale iron, and the supply is far in excess of present demand. Only a carload business is being done in this market and shading of prices is necessary to get even such small orders. Prices on resale foundry iron are about \$2 below those of last week. Few furnaces are willing to try to coax orders by making low prices. Some of the Eastern furnaces, deducting their recent suspensions of tonnage, have not more than a couple of months sure business ahead. No sales of basic are reported, but Valley basic is still offered at \$35, furnace, or \$41.16 delivered eastern Pennsylvania, and it is said that this price could be shaded at least \$1. A small lot of gray forge iron has been sold to an Eastern consumer at \$40.50, furnace, and recent transactions in malleable iron have been around \$45, furnace. Low phosphorus iron remains nominally at \$60, furnace, for copper free and \$57, furnace, for copper bearing, but there are no sales. Producers would probably accept a lower price. The Virginia furnaces are not attempting to push sales, and some of them still quote \$45, furnace, though \$44 and under can be done on resale lots. There are frequent assertions that a number of Eastern furnaces will go out of blast rather than sell iron below cost of production.

The following quotations are for iron delivered in consumers' yards in Philadelphia or vicinity, except those for low phosphorus iron, which are f.o.b. furnace.

East. Pa. No. 2 plain, 1.75 to 2.25....	\$41.54 to \$43.54
East. Pa. No. 2X, 2.25 to 2.75 sil....	42.79 to 44.79
Virginia No. 2 plain, 1.75 to 2.25 sil..	49.74 to 50.74
Virginia No. 2X, 2.25 to 2.75 sil....	50.99 to 51.99
Basic deliv. Eastern Pa.....	41.16 to 43.00
Gray forge	41.90
Standard low phos. (f.o.b. furnace)...	60.00
Malleable	46.40 to 47.40
Copper bearing low phos. (f.o.b. furnace)	57.00

Ferroalloys.—Domestic makers of ferromanganese are not naming a price, but would be willing to negotiate on the basis of \$150, seaboard, which is \$20 a ton below the price they have nominally maintained for some time. Resale lots are to be had at \$135 to \$140. Spiegeleisen is quiet. Resale lots, it is reported, are offered at about \$60, furnace.

Coke.—Offerings of furnace coke at \$7.50 and \$8, Connellsville, are reported. For foundry coke about \$1 higher is quoted.

Billets.—In the absence of transactions, open hearth billets may be nominally quoted at \$50, Pittsburgh, and forging billets at \$60, Pittsburgh. On an inquiry for 5800 tons of forging billets put out by the Baldwin Locomotive Works, a few makers are reported to have shaded \$60. The business has not been placed.

Bolts, Nuts and Rivets.—Some weakness in prices is in evidence, and it is predicted that lower prices will be named by some makers for first quarter business.

Plates.—Plate mills are running on a hand-to-mouth basis. An Eastern plate mill, which has been idle for two or three weeks, will resume work soon on an accumulation of small orders, all taken at 3c., Pittsburgh. Makers of plates see no chance of a marked increase in demand for plates until the railroads begin to place orders for cars more freely. We quote plates at 2.65c. to 3c., Pittsburgh.

Structural Material.—The market continues extremely quiet. The Pencoyd works of the American Bridge Co. is operating to better advantage, due to

increased movement of freight over the Pennsylvania Railroad. The Pencoyd works has been handicapped for some time because of inability to get sufficient pig iron and billets from the Pittsburgh plants of the Steel Corporation. We quote plain material at 2.45c. to 3c., Pittsburgh.

Bars.—Though there is very little demand for steel bars, the independent mills maintain their quotation of 3c., Pittsburgh. Bar iron is somewhat easier, a local mill quoting 4c., Pittsburgh, on a limited range of sizes. Some other makers quote 4.25c. and 4.50c., Pittsburgh. We quote steel bars at 2.35c. to 3c., Pittsburgh, the latter price being for prompt delivery from independent mills.

Sheets.—Quotations on sheets by independent mills range as follows: No. 10 blue annealed, 4.50c. to 5c.; No. 28 black, 5.50c. to 6c.; No. 28 galvanized, 7c. to 7.25c., all f.o.b. Pittsburgh.

Old Material.—Prices continue to decline on some grades. Sales of small lots of heavy melting steel have been made to Eastern mills at \$18, delivered. We quote for delivery to consuming points in this district as follows:

No. 1 heavy melting steel.....	\$18.00 to \$19.00
Steel rails, rerolling.....	30.00 to 32.00
No. 1 low phos., heavy 0.04 and under.....	26.00 to 28.00
Car wheels.....	36.00 to 37.00
No. 1 railroad wrought.....	24.50 to 25.00
No. 1 yard wrought.....	21.50 to 22.50
No. 1 forge fire.....	14.50 to 15.00
Bundled skeleton.....	15.00 to 16.00
No. 1 busheling.....	18.00 to 20.00
No. 2 busheling.....	16.00 to 18.00
Turnings (short shoveling grade for blast furnace use).....	15.00 to 16.00
Mixed borings and turnings (for blast furnace use).....	13.50
Machine-shop turnings (for rolling mill and steel works use).....	15.50 to 16.50
Heavy axle turnings (or equivalent).....	19.00 to 20.00
Cast borings (for rolling mills).....	20.00 to 21.00
Cast borings (for chemical plants).....	21.50 to 22.50
No. 1 cast.....	31.00 to 33.00
Railroad grate bars.....	25.00 to 26.00
Stove plate (for steel plant use).....	24.00 to 25.00
Railroad malleable.....	26.00 to 27.00
Wrought iron and soft steel pipes and tubes (new specifications).....	19.00 to 20.00
Iron car axles.....	35.00 to 37.00
Steel car axles.....	35.00 to 37.00

LOWER FREIGHT RATES

Competition Reduces Cost of Shipment to Seattle—Sheet Prices Reduced

SEATTLE, WASH., Nov. 22.—Keen competition for freight between the inter-coastal lines has resulted in a material reduction on ocean freights from Eastern ports to Seattle. The former rate on iron and steel products, New York to Seattle via the Panama Canal, was about \$1 per ton, but practically all the lines are now naming 70c. per ton, New York to Seattle, on plates and 75c. per ton on nearly all other forms of steel including bars, shapes, sheets, tin plate and wire products. The freight rate from Pittsburgh to New York is 38.50c. which, plus 75c. New York to Seattle, by water, makes a total rate of \$1.135 as against the all rail rate, Pittsburgh to Seattle, of \$1.665, thus effecting a saving of nearly \$11 per ton when shipped via New York and the Panama Canal. It is predicted here that still lower inter-coastal freight rates will be named by the different carrying lines in the near future.

Prices on pig iron and steel products in this market are still declining. No. 28 black sheets are being offered here on a basis of 5.50c., No. 28 galvanized 6.75c. or lower and blue annealed 4.25c. at mill, Pittsburgh. Plates have been offered here below 3c., Pittsburgh. Local conditions in iron and steel are still very dull with almost an entire absence of new buying. There is no export demand.

British Iron and Steel Market

Minimum Tin Plate Price Fixed—German and Belgian Competition Keen—Lower Price Tendency

(By Cable)

LONDON, ENGLAND, Nov. 22.

The pig iron market is fundamentally unchanged. Most Cleveland furnaces are now operating but only small quantities of foundry iron are being produced, hence domestic supplies are inadequate. Hematite iron is scarce and makers are not quoting on new business because they have heavy arrears to work off. The demand from overseas is quiet.

There is little buying of foreign iron ore. Bilbao rubio is now quoted at 53s., ex-ship, Tees.

Steel makers are endeavoring generally to reduce quotations but are hampered by high cost of fuel and raw material. German and Belgian competition are very keen. German bars are being offered at £13 10s. f.o.b. and have been sold to India at £17 10s. c.i.f. Angles are quoted at £15 10s. f.o.b. Welsh tin plate bars are now £18 10s. delivered.

The tin plate conference has fixed producers' minimum selling prices for December to March at 41s. 6d. basis, for merchant business. For delivery early next year 38s. 6d. basis has been done, which is considered about the market price. The galvanized sheet market is weak, practically no business being done.

We quote per gross ton except when otherwise stated, f.o.b. maker's works, with American equivalent figured at \$3.54 for £1, as follows:

Ship plates.....	£26 0 to £33 0	\$92.04 to \$116.82
Boiler plates.....	30 0 to 35 0	106.20 to 123.90
Tees.....	26 0 to 29 10	92.04 to 104.43
Channels.....	25 5 to 28 15	89.39 to 101.78
Beams.....	25 0 to 28 10	88.50 to 100.89
Rounds bars, ¾ to 3 in.....	27 10 to 33 0	97.35 to 116.82
Rails, 60 lb. and up.....	25 0 to 27 0	88.50 to 95.58
Billets.....	17 0 to 17 10	60.18 to 61.95
Sheet and tin plate bars		
Welsh.....	18 0 to 18 10	63.72 to 65.49
Galvanized sheets, 24 g.....	33 0 to 34 0	116.82 to 120.36
Black sheets, 24 g.....	34 10	122.13
Tin plate base box.....	1 19*	6.90
Steel hoops.....	34 0	120.36
Cleveland basic iron.....	11 15	41.60
West Coast hematite.....	15 15	55.76
Cleveland No. 3 foundry.....	11 5	39.83
Ferromanganese.....	35 0 to 40 0	123.90 to 141.60
Coke.....	3 2¾	11.01

* Prompt delivery; forward, 42½s. (\$7.52).

Ettenger-Phillips Co. Organized

The Ettenger-Phillips Co. has been organized by W. Vernon Phillips and John J. H. Phillips of F. R. Phillips & Sons Co., Pennsylvania Building, Philadelphia, and will take over the export business of the latter company in railroad equipment and supplies. F. R. Phillips & Sons Co. will continue the export of other iron and steel products. Officers of the new company are W. Vernon Phillips, president; G. W. Ettenger, vice-president, and John J. H. Phillips, secretary and treasurer. Mr. Ettenger was for 40 years engaged in selling railroad supplies in London, England, and Antwerp, Belgium.

The few engineers identified with public service commissions was brought out in a recent study of Engineering Council, which reveals that of 170 commissioners on State, public service or other regulatory commissions, only 6, or 3.5 per cent of the total number are members of the leading national engineering societies.

The rush to engineering schools is indicated by an investigation of the Institute for Public Service, W. H. Allen, director, 423 West 120th Street, New York. In 1920 there was 35,132 total registration, which is 12,437 more than in 1917 and 13,713 more than in 1914. The figures are based on returns from 65 engineering colleges.

Non-Ferrous Metals

The Week's Prices

Cents Per Pound for Early Delivery

	Copper, New York		Tin		Lead		Zinc	
	Lake	Electro-lytic	New York	St. Louis	New York	St. Louis	New York	St. Louis
Nov. 17	14.75	14.75	37.50	6.45	6.20	6.70	6.25	6.25
18	14.75	14.75	37.12½	6.40	6.20	6.70	6.25	6.25
19	14.62½	14.62½	36.00	6.25	6.15	6.60	6.20	6.20
20	14.62½	14.62½	36.00	6.25	6.15	6.60	6.20	6.20
22	14.50	14.50	36.00	6.00	6.00	6.45	6.10	6.10
23	14.50	14.50	37.00	6.00	6.00	6.40	6.00	6.00

NEW YORK, Nov. 23.

Recessions in values continue to characterize most of the markets. The copper market is weaker and quotations are lower. Buying of tin is spasmodic and prices have receded. Offerings of lead are heavy and there have been further declines in values. Zinc has again gone to lower levels with very little buying. Antimony has declined with the rest of the market.

New York

Copper.—There is no improvement in the situation and offerings by second hands, small producers and one or two large producers have further depressed the market until both Lake and electrolytic can be quoted at an average of 14.50c., New York, although it is said this price can be shaded to 14.25c. or 14c. Interest in the market by consumers is still absent, and sales for either foreign or domestic consumption are extremely light. It develops that when copper was around 15c., New York, three or four weeks ago, substantial sales were made, considering the business situation, some of these extending into the first quarter, for which a premium over 15c. was obtained. Production is being curtailed considerably in all directions.

Tin.—The tin market is almost featureless. There was practically no business last week until Thursday, when a little spot Straits was sold at 37.25c. and some metal ex-steamer in the harbor at 37c., in all amounting to possibly 100 tons. On that day there was no buying of futures and more metal was offered, but there were very few buyers and there was more or less competition for the little business that was in evidence. Yesterday there was a sharp slump in the London price. It was so extensive that sellers here would not follow it, regarding it as overdone. As a result the market remained where it was at the close of last week or around 36c., nominal, New York, for spot Straits. Today spot Straits is quoted nominally at 37c., New York. It is quite generally believed that most of the sellers are not willing to do business under 37c. At any rate, there was very little spot business yesterday or to-day and no futures, for which the quotation was around 37.50c. to 38c. On the New York Metal Exchange in the past week sales have totaled about 75 tons, part of it for October-November shipment at 37.50c. to 37.75c., and one lot of 25 tons under the rule at 37.25c. Today the London market is slightly lower than yesterday, with spot standard quoted at £230 15s. and future standard at £234 15s., and with spot Straits at £231 5s., or considerably lower than the values a week ago. Arrivals thus far this month have been 2580 tons, with 3500 tons afloat.

Lead.—The market is very weak and almost demoralized. Late yesterday the American Smelting & Refining Co. reduced its price ½c. per lb. to 6c. for both St. Louis and New York. The outside market had already reached these levels. It is intimated that even less than 6c. would be considered if a firm offer involved large quantities. The main cause of present conditions is the falling off in consumption so that lead is being offered in quantity, right and left.

Zinc.—Because of offerings by small producers and some interests needing cash the market for prime Western has declined and is now quoted at 6c., St. Louis,

or 6.40c. to 6.50c., New York. Some of the large producers are practically out of the market and progress in curtailing production is making rapid strides. It is estimated that output is under 50 per cent of capacity, with some producers averaging not more than 25 per cent.

Antimony.—Because of the general business situation this market has also declined until wholesale lots for early delivery are now quoted at around 5.87½c., New York, duty paid.

Aluminum.—The leading producer has not changed its quotation for virgin metal, 98 to 99 per cent pure, which stands at 32.90c., f.o.b. producer's plant, but in the outside market the same grade can be obtained at 26.50c. to 27.50c., New York.

Old Metals.—Prices have receded a little this week and business is at a standstill. Dealers' selling prices are nominally as follows:

	Cents Per Lb.
Copper, heavy and crucible	14.25
Copper, heavy and wire	13.00
Copper, light and bottoms	11.50
Brass, heavy	10.00
Brass, light	7.25
Heavy machine composition	14.00
No. 1 yellow rod brass turnings	7.50
No. 1 red brass or composition turnings	11.00
Lead, heavy	5.75
Lead, tea	4.50
Zinc	4.50

Chicago

Nov. 23.—Aside from a little trading by dealers and speculators the market is without activity and prices show further weakness, tin, lead, spelter and antimony having declined. We quote Lake copper at 15.50c. in carload lots; tin, 38c.; lead, 6.25c.; spelter, 6.25c.; antimony, 7.50c. to 8c. On old metal we quote copper wires, crucible shapes, 10.50c.; copper clips, 10.50c.; copper bottoms, 9c.; red brass, 10c.; yellow brass, 7c.; lead pipe, 4.75c.; zinc, 4c.; pewter, No. 1, 20c.; tinfoil, 25c.; block tin, 30c.; all these being buying prices for less than carload lots.

St. Louis

Nov. 23.—The non-ferrous markets have been quiet and softer during the past week with the quotations closing as follows: Lead, 6.15c.; spelter, 6.12½c. In less than car lots the prices were: Lead, 6.50c. to 7c.; spelter, 6.50c. to 7c.; tin, 42c.; copper, 16c.; antimony, 8c. In the Joplin district ores were duller and weaker generally with zinc blend, basis 60 per cent, about \$37.50 per ton; calamine, basis 40 per cent, \$33 per ton, and lead ore, basis 80 per cent, \$60 per ton. On miscellaneous scrap metals, although tending downward, there were no quotable changes. We quote dealers' prices on these, buying, as follows: Light brass, 5c.; heavy yellow brass, 7c.; light copper, 9c.; heavy red brass, 10c.; heavy copper and copper wire, 10c.; zinc, 4c.; lead, 6c.; pewter, 24c.; tinfoil, 30c.; tea lead, 3c.; aluminum, 15c.

The U. S. Geological Survey has issued a pamphlet of particular interest to the entire ferroalloy industry, covering the production of cobalt, molybdenum, tantalum, titanium, and vanadium, in 1918. The document contains much information concerning the domestic and foreign output of these minerals, as well as the uses to which they have been put, and the latest patents and publications concerning these.

The new sheet mill of the Ashtabula Steel Co., Ashtabula, Ohio, completion of which has been delayed because of the inability of the company having the contract for the steel to make shipment on account of the shortage of cars, will be completed shortly. The steel has been fabricated and now will be shipped rapidly because of the increased supply of cars made available through the latest order of the Interstate Commerce Commission modifying service order No. 20.

Prices Finished Iron and Steel, f.o.b. Pittsburgh

Freight Rates

Freight rates from Pittsburgh on finished iron and steel products, in carload lots, to points named, per 100 lb., are as follows:

Philadelphia	\$0.35	St. Paul	0.695
Baltimore	0.335	Omaha	0.815
New York	0.38	Omaha (pipe)	0.78
Boston	0.415	Denver	1.35
Buffalo	0.295	Denver (wire products)	1.415
Cleveland	0.24	Pacific Coast	1.665
Cincinnati	0.33	Pacific Coast, ship	
Indianapolis	0.345	plates	1.335
Chicago	0.38	Birmingham	0.765
St. Louis	0.475	Jacksonville, all rail	0.555
Kansas City	0.815	Jacksonville, rail and	
Kansas City (pipe)	0.78	water	0.46
		New Orleans	0.515

The minimum carload to most of the foregoing points is 36,000 lb. To Denver the minimum loading is 40,000 lb., while to the Pacific Coast on all iron and steel products, except structural material, the minimum is 80,000 lb. On the latter item the rate applies to a minimum of 50,000 lb., and there is an extra charge of 9c. per 100 lb. on carloads of a minimum of 40,000 lb. On shipments of wrought iron and steel pipe to Kansas City, St. Paul, Omaha and Denver, the minimum carload is 46,000 lb. On iron and steel items not noted above the rates vary somewhat and are given in detail in the regular railroad tariffs.

Structural Material

I-beams, 3 to 15 in.; channels, 3 to 15 in.; angles, 3 to 6 in., on one or both legs, 1/4 in. thick and over, and zebs, structural sizes, 2.45c. to 3c.

Wire Products

Wire nails, \$3.25 to \$4.25 base per keg; galvanized, 1 in. and longer, including large-head barbed roofing nails, taking an advance over this price of \$1.50 to \$2 and shorter than 1 in., \$2 to \$2.50. Bright basic wire, \$3.25 to \$3.75 per 100 lb.; annealed fence wire, Nos. 6 to 9, \$3.25 as quoted by the American Steel & Wire Co., and No. 8 and heavier, \$4 to \$4.00, the price of independent makers; galvanized wire, \$3.95 to \$4.45; galvanized barbed wire and fence staples, \$4.35 to \$4.85; painted barbed wire, \$3.65 to \$4.15; polished fence staples, \$3.40 to \$4.50; cement-coated nails, per count keg, \$2.85 to \$3.85; these prices being subject to the usual advances for the smaller trade, all f.o.b. Pittsburgh, freight added to point of delivery, terms 60 days, net, less 2 per cent off for cash in 10 days. Discounts on woven-wire fencing are 55 to 58 per cent off list for carload lots, 54 to 57 per cent for 1000-rod lots, and 53 to 56 per cent for small lots, f.o.b. Pittsburgh.

Bolts, Nuts and Rivets

Large structural and ship rivets.....\$4.75
Large boiler rivets.....4.85
Small rivets.....45 to 40 per cent off list
Small machine bolts, rolled threads, 40 and 5 to 40, 10 and 5 per cent off list
Same sizes in cut threads.....40 and 5 per cent off list
Longer and larger sizes of machine bolts 30 and 10 per cent off list

Carriage bolts, 3/4-in. x 6-in.:
Smaller and shorter, rolled threads 30 and 10 to 20 per cent off list
Cut threads.....30 to 20 per cent off list
Longer and larger sizes.....30 per cent off list
Lag bolts.....45 to 40 per cent off list
Plow bolts Nos. 1, 2 and 3 head.....35 per cent off list
Other style heads.....20 per cent extra
Machine bolts, c.p.c. and t. nuts 3/4-in. x 4-in.:
Smaller and shorter.....30 to 10 per cent off list
Longer and larger sizes.....20 to 10 per cent off list
Hot pressed sq. or hex. blank nuts.....\$1.50 to 50c. off list
Tapped nuts.....\$1.00 off list
C. p. c. & t. sq. or hex. nuts, blank.....list plus \$1.00
C. p. c. & t. sq. or hex. nuts, tapped.....list plus \$1.00
Semi-finished hex. nuts, U. S. S. and S. A. E.:
3/4-in. and larger.....50 and 10 to 40 per cent off list
9/16-in. and smaller.....50 and 10 to 40 per cent off list
Stove bolts in packages.....70 per cent off list
Stove bolts in bulk.....70 and 2 1/4 per cent off list
Tire bolts.....50 per cent off list
Track bolts.....7c. base
Square and hex. head cap screws:
Rolled threads.....60 and 5 to 50 per cent off list
Cut threads.....55 and 10 to 50 per cent off list
Set screws.....50 and 10 to 50 per cent off list
One cent per lb. extra for less than 200 kegs. Rivets in 100-lb. kegs 25c. extra to buyers not under contract; small and miscellaneous lots less than two tons, 25c. extra; less than 100 lb. of a size, or broken kegs, 50c. extra.
All prices carry standard extras f.o.b. Pittsburgh.

Wire Rods

No. 5 common basic or Bessemer rods to domestic consumers, \$57 to \$70; chain rods, \$57 to \$70; screw stock rods, \$62 to \$75; rivet and bolt rods and other rods of that character, \$57 to \$70; high carbon rods, \$75 to \$90, depending on carbons.

Railroad Spikes and Track Bolts

Railroad spikes, 9/16-in. and larger, \$4 to \$4.25 per 100 lb. in lots of 200 kegs of 200 lb. each or more; spikes, 1/4-in., 3/4-in. and 7/16-in., \$4.40 to \$5; 5/16-in., \$5 to \$5.75; track bolts, \$7. Boat and barge spikes, \$4.40 to \$5 per 100 lb. in carload lots of 200 kegs or more, f.o.b. Pittsburgh. Tie plates, \$3 to \$3.75 per 100 lb.

Terne Plates

Prices of terne plates are as follows: 8-lb. coating, 200 lb., \$13.80 per package; 8-lb. coating, I. C., \$14.10; 12-lb. coating, I. C., \$15.80; 15-lb. coating, I. C., \$16.80; 20-lb. coat-

ing, I. C., \$18.05; 25-lb. coating, I. C., \$19.30; 30-lb. coating, I. C., \$20.30; 35-lb. coating, I. C., \$21.30; 40-lb. coating, I. C., \$22.30 per package, all f.o.b. Pittsburgh, freight added to point of delivery.

Iron and Steel Bars

Steel bars at 2.35c. to 3c. from mill. Common bar iron, 4.15c. to 4.50c.

Welded Pipe

The following discounts are to jobbers for carload lots on the Pittsburgh basing card:

Butt Weld			
Steel		Iron	
Inches.	Black Galv.	Inches.	Black Galv.
1 1/2, 1 3/4 and 2.....	47 to 50 1/2 20 1/2 to 24	1 1/2.....	15 1/2 to 25 1/2 +1 1/2 to 1 1/2
2 1/2.....	51 to 54 1/2 26 1/2 to 40	2.....	19 1/2 to 29 1/2 1 1/2 to 1 1/2
3 to 3 1/2.....	54 to 57 1/2 41 1/2 to 44	3 to 1 1/2.....	24 1/2 to 34 1/2 8 to 12 1/2
Lap Weld			
2.....	47 to 50 1/2 34 1/2 to 38	2.....	20 1/2 to 28 1/2 6 1/2 to 14 1/2
2 1/2 to 6.....	50 to 53 1/2 37 1/2 to 41	2 1/2 to 6.....	22 1/2 to 30 1/2 9 1/2 to 17 1/2
7 to 12.....	47 to 50 1/2 33 1/2 to 37	7 to 12.....	19 1/2 to 27 1/2 6 1/2 to 14 1/2
13 and 14.....	37 1/2 to 41		
15.....	35 to 38 1/2		
Butt Weld, extra strong, plain ends			
1 1/2, 1 3/4 and 2.....	43 to 46 1/2 25 1/2 to 29	1 1/2.....	+17 +50
2 1/2.....	48 to 51 1/2 35 1/2 to 39	2.....	13 1/2 to 23 1/2 6 1/2 to 14 1/2
3 to 1 1/2.....	52 to 55 1/2 39 1/2 to 43	3.....	18 1/2 to 28 1/2 5 1/2 to 15 1/2
2 to 3.....	53 to 56 1/2 40 1/2 to 44	3 to 1 1/2.....	24 1/2 to 34 1/2 9 1/2 to 19 1/2
Lap Weld, extra strong, plain ends			
2.....	45 to 48 1/2 33 1/2 to 37	2.....	21 1/2 to 29 1/2 8 1/2 to 16 1/2
2 1/2 to 4.....	48 to 51 1/2 36 1/2 to 40	2 1/2 to 4.....	23 1/2 to 31 1/2 11 1/2 to 19 1/2
4 1/2 to 6.....	47 to 50 1/2 35 1/2 to 39	4 1/2 to 6.....	22 1/2 to 30 1/2 10 1/2 to 18 1/2
7 to 8.....	43 to 46 1/2 29 1/2 to 33	7 to 8.....	14 1/2 to 22 1/2 2 1/2 to 10 1/2
9 to 12.....	38 to 41 1/2 24 1/2 to 28	9 to 12.....	9 1/2 to 17 1/2 5 1/2 to 12 1/2

To the large jobbing trade an additional 5 per cent is allowed over the above discounts, which are subject to the usual variations in weight of 5 per cent.

On butt and lap weld sizes of black iron pipe, discounts for less than carload lots to jobbers have been seven (7) points lower (higher price) than carload lots and on butt and lap weld galvanized iron pipes have been nine (9) points lower (higher price).

Boiler Tubes

The following are the prices for carload lots f.o.b. Pittsburgh:

Lap Welded Steel		Charcoal Iron	
1 1/4 to 1 1/2 in. + 7 to —	19 1/2	1 1/4 to 1 1/2 in.	+ 23
2 in. + 2 to —	19 1/2	1 1/2 to 1 3/4 in.	+ 20
2 1/4 to 2 1/2 in.	3 to 30 1/2	2 in.	+ 10 to 15
2 3/4 to 3 in.	11 to 30 1/2	2 1/4 in.	+ 10 to 12
3 1/2 to 4 in.	20 to 40 1/2	2 3/4 in.	+ 1 to 10
		3 in. to 3 1/4 in.	— 1 1/2 to + 3
		3 1/4 to 4 1/2 in.	— 8 to list

Standard Commercial Seamless—Cold Drawn or Hot Rolled

Per Net Ton	Per Net Ton
1 in. \$327	1 1/4 in. \$267
1 1/4 in. 267	2 to 2 1/2 in. 177
1 3/4 in. 257	2 1/2 and 3 in. 167
1 1/2 in. 207	4 in. 187
	4 1/2 to 5 in. 207

These prices do not apply to special specifications for locomotive tubes nor to special specifications for tubes for the Navy Department which will be subject to special negotiations.

Sheets

Prices of the Steel Corporation for mill shipments on sheets of United States standard gage in carloads and larger lots for indefinite delivery are given in the left-hand column. For prompt delivery, independent mills are quoting up to the prices quoted in the right-hand column:

Blue Annealed		Cents per lb.
Nos. 8 and heavier		3.45 to 4.95
Nos. 9 and 10 (base)		3.55 to 5.00
Nos. 11 and 12		3.60 to 5.05
Nos. 13 and 14		3.65 to 5.10
Nos. 15 and 16		3.75 to 5.20
Box Annealed, One Pass Cold Rolled		
Nos. 17 and 21		4.15 to 6.05
Nos. 22 to 24		4.20 to 6.10
Nos. 25 and 26		4.25 to 6.15
No. 27		4.30 to 6.20
No. 28 (base)		4.35 to 6.25
No. 29		4.45 to 6.35
No. 30		4.55 to 6.45
Galvanized Black Sheet Gage		
Nos. 10 and 11		4.70 to 6.75
Nos. 12 and 14		4.80 to 6.85
Nos. 15 and 16		4.95 to 7.00
Nos. 17 to 21		5.10 to 7.15
Nos. 22 to 24		5.25 to 7.30
Nos. 25 and 26		5.40 to 7.45
No. 27		5.55 to 7.60
No. 28 (base)		5.70 to 7.75
No. 29		5.95 to 8.00
No. 30		6.20 to 8.25
Tin-Mill Black Plate		
Nos. 15 and 16		4.15 to 6.05
Nos. 17 to 21		4.20 to 6.10
Nos. 22 to 24		4.25 to 6.15
Nos. 25 to 27		4.30 to 6.20
No. 28 (base)		4.35 to 6.25
No. 29		4.40 to 6.30
No. 30		4.40 to 6.30
Nos. 30 1/2 and 31		4.45 to 6.35

PERSONAL

Charles S. Baur, advertising manager of THE IRON AGE, has been elected a director of the United Publishers' Corporation to fill the vacancy created by the resignation of W. H. Taylor.

Fred W. Schultz has been appointed advertising representative of THE IRON AGE in New York territory.

Carl F. Dietz, who was elected secretary of the National Machine Tool Builders' Association, at its



C. F. DIETZ

convention in New York on Nov. 11 and 12, is vice-president and general manager of sales of the Norton Co., Worcester, Mass. Mr. Dietz has been connected with the Norton interests for nearly 10 years. He is a graduate engineer, but forsook engineering work for the sales department and a number of years ago was appointed assistant sales manager of the Norton Co., which at that time manufactured only grinding wheels. Later he became sales manager of the same company, and upon the consolidation of the Norton Co. and the Norton Grinding Machine Co. he became vice-president and general manager of sales of the united company.

Thomas M. Rector, formerly in charge of the Division of Food Technology of the Institute of Industrial Research, Washington, has been appointed director of the Department of Industrial Chemistry of the Pease Laboratories, Inc., 39 West Thirty-eighth Street, New York. During the war, he served as an officer in the chemical warfare service and was active in the perfection of the American gas mask.

L. R. Fedler has been appointed district manager for the Keller Pneumatic Tool Co., in the Milwaukee district, with offices at 915 Majestic Building, Milwaukee. For the past 12 years, Mr. Fedler has been associated with the sales organization of the Chicago Pneumatic Tool Co. in the Milwaukee territory.

At the annual meeting of the Crucible Steel Co. of America William R. Childs and Hamilton Stewart were re-elected directors for a term of three years. F. B. Hufnagel, W. R. Joralemon and Duane Armstrong were elected for a term of three years to replace H. D. W. English, G. Harton Singer, resigned, and J. M. May, deceased.

Frederick T. Davis is now connected with the New York branch office of the Becker Milling Machine Co., Reed-Prentice Co. and Whitcomb-Blaisdell Machine Tool Co., located at Grand Central Palace, New York. Mr. Davis was formerly with the Davidson Tool & Mfg. Corporation.

On Nov. 22, S. C. Wilson took up duties as sales engineer in the Pittsburgh office of the Whiting Corporation, 1224 Fulton Building, succeeding C. H. Martin. Mr. Wilson has spent the last year and a half at the main office and works, Harvey, Ill. He is a graduate of Cornell University. J. D. James, Whiting Corporation, has taken up duties as assistant to the Buffalo representative, George F. Crivel, 430 Ellicott Square, Buffalo, N. Y. Mr. James has been in the employ of the Whiting Corporation 11 years.

C. F. Meyer, assistant secretary Landis Machine Co., Waynesboro, Pa., will leave shortly for an extended trip to the Orient in the interests of his company, visiting England, India, the Dutch East Indies, Australia, Philippine Islands, China, Japan and the Hawaiian Islands.

W. G. Griffiths has become assistant to the president of the Blaw-Knox Co., Pittsburgh, in charge of cost accounting. Before joining this company he had been with the Crucible Steel Co. of America for about 18 years.

J. R. Stone, J. R. Stone Tool & Supply Co., Detroit, sailed for South America recently to establish business connections.

A. E. Smith has been elected a vice-president of the Union Tank Car Co., effective Nov. 15, having charge of construction and maintenance of plant and equipment. All correspondence regarding repairs to cars and Master Car Builder matters should be addressed to him. The office of Master Car Builder has been discontinued.

Albert A. Dowd, founder and formerly president of the Service Engineering Co., Inc., 25 Church Street, New York, has severed his connection with that company and formed a new organization to be known as the Albert A. Dowd Engineering Co., with offices and drafting rooms at 131 West Thirty-Ninth Street, at Broadway.

The organization will specialize on design of tools, design of automatic machinery, factory investigations, industrial engineering and building of tools and special machinery.

Frank E. Smith, who has had a long and successful career as a production executive in the automotive industry, has been elected vice-president of the Republic Motor Truck Co., Alma, Mich., succeeding W. J. Baxter, resigned. Since the war Mr. Smith has been conducting an efficiency bureau in New York.

C. M. Weld, mining engineer, D. M. Liddell, chemical engineer and metallurgist, and P. H. Lazenby, civil engineer with wide experience in public utilities, have formed a partnership for practice as consulting engineers and economists under the firm name of Weld, Liddell & Lazenby, with offices at 2 Rector Street, New York.

T. M. Tinkham has been appointed assistant general superintendent of the Briscoe Motor Corporation, Jackson, Mich. Until recently he was general superintendent for the Willys-Overland Co., Toledo, Ohio.

Jean Louis Paul Girod, inventor of the Girod electric furnace, was recently made a Chevalier of the Legion d'Honneur of the French Republic for services for the national defense rendered during the war.

Sterling W. Hubbard has resigned as one of the resident managers of the Cleveland office of Rogers, Brown & Co., dealers in pig iron and coke. His resignation becomes effective Jan. 1, when he will move to Santa Barbara, Cal., where he will operate a fruit ranch. Mr. Hubbard has been connected with the Cleveland office of Rogers, Brown & Co. 17 years, going to that firm Jan. 1, 1903, from the Matthew Addy Co. For several years he has shared joint management of the office with Harwood Wilson. His long association with the trade has made him one of the best known pig iron salesmen in the Central West.

William P. Snyder, Jr., president W. P. Snyder & Co., Pittsburgh, has been selected a trustee of the University of Pittsburgh.

A change is announced in the management of the Pressed Metals Co., of Canada, Ltd., Toronto, Ont. F. G. B. Allan has been chosen to succeed J. W. Leighton as general manager of the company. Mr. Leighton will in future act as chief engineer and supervisor of works and will devote the greater part of his time to the development of the patented bushings and tube processes of the company.

K. H. Saunders, recently general manager Woodbury Co., Waterbury, Conn., has been made superintendent of the Brattleboro, Vt., plant, Millers Falls Co., small tools, etc., to succeed Frank G. Bitzer, who has been transferred to the main plant, Millers Falls, Mass.

Harvey Schilling, formerly secretary to W. C. Reilly, general superintendent of the Youngstown Sheet & Tube Co., Youngstown, Ohio, has been appointed assistant superintendent of the rod and wire

department, succeeding G. E. Mirfield, assigned to special work at the works office. Charles Knesal has been named to succeed Mr. Schilling.

Kurt Orbanowski, Berlin representative of the American Steel Export Co., New York, who recently arrived in the United States on business, will visit H. W. McAteer, president of the company, in Pasadena, Cal., before returning to Berlin Dec. 11.

H. M. Lane, president H. M. Lane Co., an industrial engineering firm at Detroit, and E. J. Woodison entertained about 250 foundrymen on Nov. 13 at a barbecue at Mr. Lane's place on Grosse Isle, about 18 miles from Detroit.

T. J. Nee, Allied Machinery Corporation, sailed from Seattle on Nov. 19 for the Orient.

L. A. Scipio, formerly of Robert College, Constantinople, Turkey, has been appointed acting director of the bureau of research conducted by the American Society of Heating and Ventilating Engineers at the Bureau of Mines laboratories in Pittsburgh, succeeding the late Prof. John R. Allen, the director of the bureau, who died on Oct. 26.

A. L. Wurster, who has been in charge of the sale of drop forge supplies for the Sizer Forge Co., Buffalo, has severed his connection with that company and has associated himself with the Witherow Steel Co., Pittsburgh, as sales manager. He will devote his attention to the sale of rolled specialties in plain and alloy steel.

E. P. Thomas, president United States Steel Products Co., and T. P. Alder, treasurer of that company, have returned to New York after a sojourn of several months in Italy, France and England.

J. Frederick Thorne has been appointed assistant to Alfred Bickford, executive secretary of the Associated Industries of Seattle. Mr. Thorne resigned as business manager of a publication known as *Pacific Ports* to accept his new position.

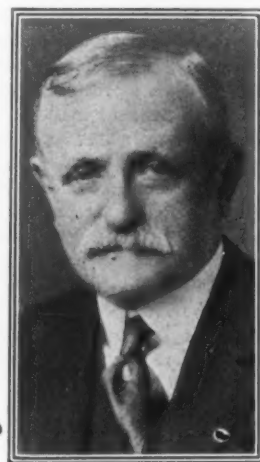
OBITUARY

CHARLES H. MORGAN, vice-president and superintendent Arcade Mfg. Co., Freeport, Ill., died recently at his home in that city. He was born in Marlboro, N. Y., Jan. 1, 1853. His father moved to Freeport when he was one year old and Mr. Morgan lived there practically all of his life. After a high school education he learned the molder's trade in the foundry of his uncle, the late Jerome Hazen. He engaged in business with his brother, Edgar Morgan, and they were admitted into partnership by their uncle in a jobbing foundry business and became his successors upon his death. In 1891 Charles Morgan was one of the organizers of the Arcade Mfg. Co. to make hardware specialties, first employing 25 men and now using several hundred employees. He was intimately connected with the development of the modern molding machine.

JOSEPH H. BAIRD, an inventor of many automatic machines, and former president of the Baird Machine Co., Bridgeport, Conn., died in Cheshire, Conn., on Nov. 14, at the age of 92 years 11 months. He is reputed the first man in the United States to make pins and invented many of the machines and methods used throughout the world in making them. He invented the pin-sticking machine which puts the pins into papers; he brought out the safety pin machine which takes the wire from the coil and drops out complete pins ready for the cleaning or plating operation; he sold the invention of a machine for fastening the hoops in hoop skirts for \$30, which was resold for \$50,000. He was born in Oakville, Conn., in 1827, and at the age of 10 he was working in the shop of Scovill & Buckingham Co., now the Scovill Mfg. Co., Waterbury, Conn. At the age of 19 he went to Huntington, Conn., where he opened a shop for the manufacture of tools, presses and special machinery. In 1851 he again entered the employ

of the Scovill & Buckingham Co. and moved with them to Waterbury. Three years later he left the company, returned to Oakville and built what is known as Slades Mill. Then he joined the Oakville Co. as designer of tools and machines. In 1861 he associated with the Benedict & Burnham Mfg. Co., Waterbury, now part of the American Brass Co., and soon afterward became interested in the Naugatuck Machine Co., Union City. When the shops of this company were burned in 1878 he formed the Baird Pin Co. He now became interested successively in the Waterbury Machine Co., the Baird Pattern Shop and Henderson Brothers, Waterbury. Eventually Mr. Baird disposed of his interest in Henderson Brothers, brought his other interests under one head and organized the Baird & Warner Co., which shortly changed its name to the Baird Machine Co. He retired from the presidency in 1913 at his own request in favor of a younger man. He acted in an advisory capacity until the last.

GEORGE BAKER, with the Illinois Steel Co. and its predecessor, the North Chicago Rolling Mill Co., almost continuously for 50 years, died at his home in Chicago on Nov. 18. About a year and a half ago, Mr. Baker resigned as general sales manager after 18 years in that position, and since that time acted in an advisory capacity. He was born in Hamilton, Ont., on Jan. 18, 1849, and in 1871 went to Chicago, where he became identified with the North Chicago Rolling Mill Co., acting in a secretarial capacity to O. W. Potter, president, who was also the first president of the Illinois Steel Co. For a number of years after the Illinois Steel Co. was formed Mr. Baker was in the treasurer's department



GEORGE BAKER

and subsequently he entered the sales organization. When the United States Steel Corporation came into existence, Mr. Baker was appointed general sales manager of the Chicago subsidiary and he continued in that office until the spring of 1919. Mr. Baker's long connection with the Illinois Steel Co. won for him a wide acquaintance in the iron and steel trade. He was an active member of the Chicago Athletic Association, the South Shore Country Club (Chicago), the Evanston (Ill.) Golf Club and several fraternal organizations. He is survived by the widow, two daughters and one son, Orrin Baker, who is identified with the sales department of which his father was formerly the head.

CHARLES ROBERTSON, president Revere Drop Forge Co., Revere, Mass., died at his home, Nov. 15, aged 78 years.

CONGRESSMAN MAHLON H. GARLAND, who died suddenly in Washington on Nov. 18, was formerly president of the Amalgamated Association of Iron, Steel and Tin Workers and had been a puddler and heater in the iron mills.

F. H. BALL, president Ball & Ball Carburetor Co., Detroit, died at his home in this city on Nov. 20. He was prominent as a builder of high speed engines, and organized the Ball Engine Co., Erie, Pa., the Ball & Wood Engine Co., Elizabeth, N. J., and the American Engine Co., Boundbrook, N. J.

FRANK P. JOHNSTON, former president Detroit Screw Works and of the Employers' Association of Detroit, died a few days ago in a Detroit hospital, aged 59. He went to Detroit from Kalamazoo, Mich., in 1906, as general manager of the Detroit Screw Works. He retired from business in 1918.

SOL S. KOHN, for many years president of the Chrome Steel Works, Chrome, N. J., died at his home Nov. 18.

Machinery Markets and News of the Works

BETTER INQUIRY

Several Large Lists of Machine Tools Issued

Santa Fe Railroad, American Steel & Wire Co. and Waukesha Motors Co. Are Prospective Buyers

Signs of improvement, for which the machine-tool industry has been looking for many weeks, are in evidence. While actual orders are few, the number and size of the inquiries received during the past week indicate that a new buying movement may be in the making.

Some of the substantial inquiries are as follows: The Santa Fe Railroad at Chicago has issued a supplementary list of more than 60 tools, many heavy type, for its new shops at Albuquerque, N. M. Deliveries are wanted by June, 1921. The Waukesha Motors Co., Waukesha, Wis., has issued an inquiry for a large lot of production tools, and its purchases, it is reported, will total at least \$100,000. The American Steel & Wire Co. has issued at Cleveland an inquiry for 21 machines. The Redington Standard Fittings Co., Redington, Pa., is in the market for about a dozen tools.

There are other smaller inquiries in various markets,

which indicate that some manufacturers are working on plans to reduce manufacturing costs through the introduction of modern, high production tools.

From Detroit comes the report that there are slightly improved conditions in the truck section of the automobile industry. Another interesting item is that the Dodge Brothers' plant, which has been shut down for a week, resumes on an increased production schedule, according to an announcement by the company.

Some Cincinnati machine-tool builders have received shipping instructions on tools that had been held up. Some of these instructions have come from companies affiliated with the automobile industry and may indicate an expectation of renewed activity in automobile manufacturing.

The auction sale of 600 used tools at the plant of the Nelson Blower & Furnace Co., South Boston, showed that some dealers have confidence in the future, as they bought heavily at good prices. Some manufacturers were also bidders on tools for their own use, among the more active being the Addressograph Co., Chicago, and the Pacific Mills, textiles, Boston. Many of the tools brought from 60 to 70 per cent of their present replacement value. The highest price paid was \$7,750 for a 36-ft. Cincinnati planer, which the company bought new three years ago for \$12,000. The buyer was the Beloit Iron Works, Beloit, Wis.

New York

NEW YORK, Nov. 23.

Although there is no improvement in the machine-tool trade in this market so far as actual sales are concerned, a slightly better inquiry is noted. The trade is hopeful that some of the pending inquiries will result in orders within the next few weeks. The Redington Standard Fittings Co., Redington, Pa., has inquired for nine Warner & Swasey turret lathes, one 3-ft. American or Cincinnati-Bickford radial drill, one 4-ft. radial drill, same make as 3-ft.; one 36-in. Bullard vertical boring mill, one turret for 26-in. Lodge & Shipley lathe, one No. 12 Grand Rapids grinder; also 11 chucks. The Tidewater Oil Co., New York, has inquired for a universal milling machine, similar to Milwaukee No. 3, for shipment to Mexico. The General Electric Co. has inquired for several punch presses.

A number of crane orders are pending an improvement in the business situation. Several sales of second hand locomotive cranes are noted. Manufacturers of hand power cranes report conditions in this line dull, particularly in export trade. The Stanley Works, New Britain, Conn., purchased a 15-ton overhead traveling crane from the Northern Engineering Works. Among current inquiries are: Dwight P. Robinson & Co., Inc., New York, four 5-ton foundry cranes and one 5-ton machine shop crane for the Mutual Enamel Ware Co., Chattanooga, Tenn.; Imperial Japanese Navy, 1 Madison Avenue, New York, four 5-ton, 32-ft. jib wall cranes for Japan; Standard Oil Co., Bayway, N. J., two 10-ton, 25-ft span bucket cranes, 5-yd. capacity and one 25-ton, 50-ft. span overhead traveling crane with 5-ton auxiliary hoist; Standard Service Corporation, Singer Building, New York, a 25-ton to 30-ton locomotive crane with a long and a short boom for export to Cuba.

Among recent sales are: Euclid Crane & Hoist Co., a 3-ton, 32-ft. 4-in. span hand power crane to the American Agricultural & Chemical Co., Chrome, N. J.; Shepard Electric Crane & Hoist Co., two 1-ton, 27-ft. 5-in. span cranes

to the Railway & Mine Supply Co., Kinkaid, Ill.; Northern Engineering Works, four 1-ton and 2-ton electric hoists to Mitsui & Co., New York, for a Japanese shipyard; Maris Brothers, Philadelphia, one 10-ton and the Whiting Corporation two 20-ton overhead traveling cranes to Czarnikow Rionda, 112 Wall Street, New York, for the Cuban Cane Sugar Corporation, Cuba.

The Aetna Machinery Corporation, Newark, N. J., has closed the following orders: Broadway Machine Co., Green Bay, Wis., one miller; Tucson Cylinder Grinder Co., Tucson, Ariz., grinder; Ortonville Auto Supply Co., Ortonville, Minn., grinder; George Riley & Co., Los Angeles, Cal., miller; Hartmann's Machine Works, Red Bluff, Cal., Howard Machine Co., Indianapolis, Winchester Mfg. Co., Winchester, Ind., one machine each; Eddy Valve Co., Waterford, N. Y., drill; J. A. Cree, Utica, Ohio, two lathes; W. A. Ballard, Jamestown, N. Y., drill, and H. O. Hilfker, Rochester, N. Y., drill. A number of other inquiries are pending which it expects to close immediately after Thanksgiving.

The American Can Co., 120 Broadway, New York, will take bids early in the year for the erection of its four-story addition to its plant on Elizabeth Avenue, Newark, for the manufacture of can-making machinery. It is estimated to cost close to \$500,000; plans are being completed. The company also has plans under way for a new plant on Binford Street, Boston, to cost about \$250,000.

The Tube Mainfold Corporation, New York, has been incorporated with a capital of \$100,000 by M. Pollak, F. B. Colton and S. Hayes, 256 Broadway, to manufacture metal tubing for automobile service, and kindred specialties.

H. A. Berger & Co., 103 East 111th Street, New York, manufacturer of metal ceilings, etc., has filed notice of change of name to the Berger-Kranz Co.

The Electric Regulator Mfg. Co., New York, has been incorporated with a capital of \$100,000 by J. G. Hochman, M. Samburg and A. M. Levy, 195 Chrystie Street, to manufacture electrically operated regulating apparatus and other equipment.

A new power house to cost about \$100,000 with equipment will be erected by the Utica Steam & Mohawk Valley Cotton Mills, Utica, N. Y., on State Street.

The C. & G. Cooper Co., 11 Broadway, New York, manufacturer of Corliss engines and parts, has awarded contract to Dwight P. Robinson & Co., 125 East Forty-sixth Street, for a one and two-story addition at Mount Vernon, Ohio, estimated to cost in excess of \$300,000. It is proposed to have list of machinery ready for purchase early in 1921.

The Strickland Foundry & Machine Works, Inc., New York, has been incorporated with a capital of \$50,000 by A. H. and A. H. Strickland, Jr., and I. Perlman, 8 Bridge Street, to manufacture machinery, tools and castings.

The Esrom Supply Corporation, New York, has been merged with Fairbanks, Morse & Co., 30 Church Street, New York, manufacturer of engines, motors, etc., with headquarters at Chicago.

The Mugiers Iron Works, Inc., 899-901 East 134th Street, New York, has completed plans for a new one-story plant, 50 x 100 ft., on 133rd Street, near Willow Avenue, to cost about \$17,000.

The Auto Supply Service Corporation, New York, has been incorporated with a capital of \$500,000 by Frank M. Walsh, New York; H. Bouten and L. H. Anderson, Brooklyn, to manufacture automobile engines and parts.

The Eastern Engineering & Construction Co., East Rockaway, L. I., manufacturer of heating systems, piping, etc., has awarded a contract to the Levering & Garrigues Co., 552 West Twenty-third Street, New York, for its one-story plant on Van Dine Avenue, near Old Road, Glendale, L. I., 120 x 300 ft. estimated to cost about \$80,000. The company is affiliated with Almirall & Co., Inc., Dominick and Clarke streets, New York, manufacturer of similar products. J. A. Almirall is head.

The Clinton Motors Corporation, New York, has been incorporated with a capital of \$300,000 by S. Newman, H. H. Waller and A. J. Furth, 319 New York Avenue, Brooklyn, to manufacture automobile parts, engines and kindred equipment.

The Dubois Supply Co., Poughkeepsie, N. Y., has been incorporated with an active capital of \$52,500, by E. J. MacClelland, S. F. Titus and D. J. Cronk, Poughkeepsie, to manufacture machinery and parts.

The McDougall & Potter Co. Iron Works, 606 West Fifty-fifth Street, New York, has acquired property on 141st Street, between Rider Avenue and Canal Place, 75 x 125 ft., for future extensions.

Randolph Ember, 11 King Street, Brooklyn, has had plans completed by Koch & Wagner, architects, 32 Court Street, for a new one-story foundry, 57 x 96 ft., on Delevan Street, near Richards Street, to cost about \$25,000.

The Adirondack Power & Light Corporation, Amsterdam, N. Y., has arranged for a bond issue of \$2,500,000, the proceeds to be used in part for the construction of its proposed new hydroelectric power plant, to be operated in conjunction with present generating stations on the Hudson and Hoosic rivers, and East Canada Creek. J. Ledlie Hees is president.

Fire, Nov. 18, destroyed the two-story brick plant of the De Forest Radio Co., 1415 Sedgwick Avenue, New York, with loss, including equipment, estimated at about \$500,000.

The Texas Co., 17 Battery Place, New York, operating oil refineries, has increased its capital from \$130,000,000 to \$143,000,000. It has plans under way for a number of new buildings.

The Edwin B. Stimpson Co., 68 Franklin Avenue, Brooklyn, manufacturer of metal and wire goods, machinery, etc., has increased its capital from \$100,000 to \$500,000.

A power house to cost about \$25,000 will be erected by the Utica Knitting Co., Utica, N. Y., at its textile works on North Erie Street. It will be 90 x 130 ft.

The Brunner Mfg. Co., 19 Gray Avenue, Utica, N. Y., manufacturer of air compressors, etc., has increased its capital from \$250,000 to \$500,000.

The Goodyear Tire & Rubber Co., 123 West Sixty-fourth Street, New York, with plant at Akron, Ohio, has arranged for a fund of \$25,000,000 for general refinancing and operating work.

The American Taximeter Co., 22 West Sixty-first Street, New York, manufacturer of taxicab taximeters, and other precision equipment, has leased the building at 618 West Fifty-eighth Street for a new local works.

Electric traveling cranes, hoisting and conveying equipment, and industrial railway line, and other freight loading and unloading apparatus will be installed on the proposed new docks and piers to be constructed by the American Chain of Warehouses, Inc., Cleveland, Ohio, at Jamaica Bay, L. I. in accordance with a proposition made by this company to the Board of Estimate, Board of Aldermen, New York. The company proposes to lease 1000 acres from the city near

Barren Island, for a period of 50 years at a total rental of \$1,250,000. On this site there will be constructed 24 1000-ft. docks and piers, with a number of warehouses and industrial buildings. The initial expenditure, as guaranteed by the company, will approximate \$14,000,000, including machinery and equipment. Alton H. Greeley is president.

The Christopher Machine & Tool Co., New York, has been organized by S. F. Meyer and J. A. Bolch, 181 Christopher Street, to manufacture machinery and tools.

The Dalton Adding Machine Co., Walnut Street, Newwood, Cincinnati, Ohio, manufacturer of adding and calculating machines, has acquired a six-story building at the corner of Reade and Church streets, New York, 25 x 51 ft., for new local headquarters and general works service.

Fire, Nov. 11, destroyed a portion of the plant of the Utica Valve & Fixture Co., Utica, N. Y., manufacturer of gas fixture fittings, valves, etc., with loss estimated at about \$50,000.

William A. Force & Co., Inc., 535 Pearl Street, New York, manufacturer of numbering machines, etc., has had plans prepared for extensions in its two-story plant at 216-22 Nicholas Avenue, Brooklyn, to cost about \$15,000.

The Garford Motor Truck Co., 427 West Forty-second Street, New York, has completed plans for its new plant at Long Island City, for assembling, repair operations, etc.

The Hudson Auto Lamp & Radiator Co., New York, has been organized to manufacture automobile radiators, lamps, and other sheet metal specialties. J. Defrin and M. Davis, 826 Manida Street, head the company.

David Belais, 13 Dutch Street, New York, jewelry manufacturer and assayer, has acquired property at 137 West Fourteenth Street for a new six-story factory.

The Novo Pressboard Co., Poughkeepsie, N. Y., has been incorporated with a capital of \$100,000 by F. B. and F. A. Lown, and J. Nicklin, Poughkeepsie, to manufacture hardware and other metal products.

The United States Metal Cap & Seal Co., 103-7 West Thirtieth Street, New York, manufacturer of patented metal bottle caps and seals, is considering plans for extensions, and will install additional equipment. James B. Taylor is president.

The Cunard Steamship Co., 21 State Street, New York, is having plans prepared by the Todd, Robertson & Todd Engineering Corporation, 347 Madison Avenue, for its proposed new piers, warehouses and freight terminal at Weehawken, N. J. The installation will include electric traveling cranes, freight conveying and handling machinery, hoisting and unloading apparatus, as well as an electric power plant for general operation. The project is estimated to cost about \$30,000,000 complete.

The Automotive Indicator Co., Passaic, N. J., has been incorporated with a capital of \$1,000,000 by James H. Smith, Jr., Louis Buonocoro and Ralph P. Tooker, 623 Main Avenue, to manufacture speed indicators and other precision equipment.

Paul O. Abbe, Inc., 30 Broad Street, New York, manufacturer of grinding machinery, is having plans prepared for the erection of a one-story addition to its plant at Little Falls, N. J., to cost about \$15,000.

The Cigol-Behrens Rubber Mfg. Co., Lodi, N. J., has been incorporated with a capital of \$350,000 by Frank C. Cigol, Louis G. Davenport and J. Henry Behrens, all of Lodi, to manufacture rubber products.

The Automatic Switch Co., Guttenberg, N. J., has been incorporated with a capital of \$50,000 by Peter F. Goehring, Peter Schmidt and William F. Burke, to manufacture switches and automatic-operated switching devices.

The Simms Magneto Co., North Arlington Avenue, East Orange, N. J., manufacturer of magnetos and ignition equipment for automobile service, has called a special meeting of stockholders on Nov. 30 to approve an increase in capital from \$1,500,000 to \$2,000,000. It is also proposed to arrange for a bond issue of \$500,000.

The Gloria Motor Corporation, Washington, N. J., recently incorporated, has acquired the building formerly occupied by the Artercraft Co., for its new plant. It has also secured options on about two acres adjoining, and plans to utilize the site for additions. Alterations will be made in the present building and equipment installed for the manufacture of automobile engines. Parts will be manufactured elsewhere under contract and an assembling department established at the local works. Upon erection of the proposed additions, complete manufacture of parts and other equipment will be carried out at the local plant. It is proposed to have the factory ready for operation early in the coming year. Headquarters are at 407 Schubert Building, Philadelphia.

The United States Cartridge Co., Maurer, near Perth Amboy, N. J., has abandoned plans for the removal of its

local plant to Lowell, Mass., as recently considered, and will continue operations at the present location. Headquarters of the company will be maintained, as heretofore, at Lowell.

The Bergen Engineering & Construction Co., Hackensack, N. J., has been incorporated with a capital of \$30,000 by Nicola Di Monte, Samuel G. Cohn and Charles D'Anna, to manufacture engineering specialties.

The Singer Mfg. Co., Elizabethport, N. J., manufacturer of sewing machines and parts, has increased its capital from \$60,000,000 to \$90,000,000.

The Bureau of Yards and Docks, Navy Department, Washington, D. C., will establish a number of machine shops for aircraft construction and repair in connection with its new dirigible hangar at Lakehurst, N. J., estimated to cost about \$3,700,000, including equipment. It is proposed to have the entire works ready for service early next spring, and the hangar is now in course of erection.

The Continental Can Co., 616 West Forty-third Street, New York, has filed plans for an addition to its plant at 610-24 Monmouth Street, Jersey, N. J., including improvements in the present works, to cost about \$60,000. The company recently acquired property for a branch plant.

The Decy Iceless Express Container Co., Jersey City, N. J., has been incorporated under New York laws with capital of \$25,000, by R. E. A. and R. E. Decy, all of Jersey City, to manufacture cans and other metal containers.

The Leona Handpiece Co., 121 Bowers Street, Jersey City, N. J., has filed notice of organization to manufacture surgical instruments. Milton D. Barkman heads the company.

The Conrow Bearing Corporation, Newark, has been incorporated with a capital of \$500,000 by William A. Walling, E. L. Dolder and George Conrow, 478 David Avenue, Kearny, near Newark, to manufacture roller and other bearings.

The Empire Cutlery & Drop Forging Co., Newark, has been incorporated with a capital of \$50,000 by George Olson, Leo Olschewski and Charles H. Stewart, 9 Clinton Street, to manufacture cutlery products, drop forge tools, etc.

The R. G. Smith Tool & Mfg. Co., 315 Market Street, Newark, has filed notice of organization to manufacture tools, machine parts, etc. Robert G. Smith, 209 Park Place, Irvington, heads the company.

The International Brass & Copper Co., 790 Broad Street, Newark, has filed notice of change of name to the Tubular Products Co.

The Perfection Electric Equipment Co., Newark, has been incorporated with a capital of \$50,000 by C. C. F. and Edward C. Daniels, 411 Halsey Street, to manufacture electrical products.

The Cutlery Corporation of America, 245 New Jersey Railroad Avenue, Newark, has preliminary plans under way for the erection of a new three-story and basement plant, in the vicinity of its present works or on a site to be selected in the Irvington section. It is planned to begin construction early in the year. James A. Kilgour, 31 Springdale Avenue, is architect.

The Keystone Die & Stamping Co., 373 Park Avenue, Newark, has filed notice of organization to manufacture metal stampings, dies, tools, etc. J. W. Wohlhieter, 26 Steuben Street, East Orange, N. J., heads the company.

The Central Auto Top Co., 561 Central Avenue, Newark, has filed notice of organization to manufacture automobile tops and frames. Herman Genis, 202 Monticello Avenue, Jersey City, N. J., heads the company.

New England

BOSTON, Nov. 22.

With business the past week almost at a standstill, local interest centered in the auction sale of 600 machine tools at the plant of the Nelson Blower & Furnace Co., South Boston. Practically 75 per cent of this equipment is in excellent condition, having been purchased from manufacturers within three years. The other 25 per cent has been in operation six years or more. The better grades of tools, for which there was spirited bidding, especially for gear cutters, shapers and radial drills, brought, on an average, 60c. to 70c. on the dollar of replacement value. Buyers came from many sections of the country, including Chicago, Philadelphia, New York, Newark, N. J., Portland, Me., and Keene, N. H. A number of used tool dealers and machine tool manufacturers, the latter having an equity in part of the equipment offered, were represented at the sale. Of the former, Mr. Metzler, New Jersey Machinery Exchange, Newark, N. J., was the heaviest investor, his purchases constituting one of the leading features. Of the several strictly industrial concerns interested, the Addressograph Co., Chicago, probably was the most active, and of the textile, the Pacific Mills, Boston. J. E. Conant, Lowell, Mass., was auctioneer.

The highest price paid for a tool was \$7,750, for a Cin-

cinnati 36-ft. over-all heavy type planer, which the Nelson corporation bought about three years ago, with several attachments for slightly more than \$12,000. The replacement value today is about \$13,000. The Beloit Iron Works, Beloit, Wis., was the buyer.

A large number of milling machines were sold, for which very good prices were realized. There were more Cincinnati milling machines than other makes, the number sold approximating 24, including two No. 1 plain machines at \$637.50 each, or a total of \$1,275, to the Factory & Mills Supply Co., Boston; a No. 2 to the Terminal Machinery Co., New York, at \$750, and others to the New Jersey Machinery Exchange at \$1,000, the Addressograph Co. at \$800, the Factory & Mill Supply Co., Boston, at \$750, and three No. 2 plain machines purchased by the Addressograph Co. totaled \$1,150. A Cambridge, Mass., interest took a No. 2 vertical at \$1,500, and Joseph Beal & Co., Boston, another in not as good condition at \$825. J. Gelb & Co., New York, bought a No. 2 full universal for \$1,200, while a duplicate went at \$1,300. The Addressograph Co. bought a No. 3 plain milling machine for \$1,200, and another for \$1,150, while R. Young, Boston, bid \$1,575 for a No. 3S Cincinnati miller. Other Cincinnati machines sold for less.

Chandler & Farquhar, Boston, paid \$1,475 for a Becker No. 5C vertical milling machine, and Cox & Sons, Bridgeport, N. J., \$850 for another, while the Terminal Machinery Co. paid \$750 for a Becker No. 5B. Two Kempsmith No. 2 plain milling machines were sold, one to Joseph Beal & Co. for \$650 and the other to F. H. Bang, New York, for \$762.50, while Mr. Metzler paid \$900 for a No. 3 plain miller of the same make. Three Dow No. 1 machines changed hands, J. Nuttall, Philadelphia, taking one at \$287.50, Purinton & Smith, Hartford, Conn., another at \$275, and J. L. Lucas & Son, Inc., Bridgeport, Conn., the third at \$275. A western Massachusetts manufacturer paid \$1,025 for a Rockford plain milling machine and Chandler & Farquhar \$625, while Joseph Beal & Co. paid \$900 for a universal, same make, having a table capacity to take work up to and including 48 x 12-in.

The A. L. Smith Iron Works, Chelsea, Mass., bid \$237.50 for a Pratt & Whitney automatic miller, having a table capacity of 18 x 7-in., and a Bridgeport, Conn., dealer \$112.50 for a similar machine. An American plain milling machine, with a table capacity of 34 x 8-in., sold to the Standard Machinery Co., New Haven, Conn., for \$375, and the E. A. Eddy Machinery Co., Providence, R. I., paid \$100 more for a like tool having a table capacity of 46 x 10-in. Mr. Metzler took a No. 3 Hendey-Norton plain miller at \$425; Joseph Beal & Co., Oesterlein plain miller, table capacity 30 x 8-in., at \$325; and a Brainard standard No. 3 universal at \$337.50, and the Brownell Machinery Co., Providence, R. I., a Garvin No. 1 full universal at \$800. Two Gooley & Edlund Lincoln type milling machines, with a 36 x 8 x 13-in. range of feeds, went for \$275. These show the general range of prices on the milling machines. A No. 6 vertical Becker milling machine, costing \$4,600 today, was bid in by a representative of the Becker Milling Machine Co. at \$1,800.

A Cincinnati-Bickford radial drill, with a 4-ft. arm-swing, went for \$1,075, another for \$1,050, while one with a 7-ft. arm-swing sold for \$1,650 and a 5-ft. swing for \$1,600, the last two to Hill, Clark & Co., Boston. These two tools originally cost the Nelson company \$2,200 each, and today are worth about \$4,000. The American Optical Co., Southbridge, Mass., purchased a Fosdick 48-in. arm-swing machine for \$875, and a Boston dealer an American 48-in. table type tool for \$600.

A very large percentage of the sensitive drills offered were Charles G. Allen's. Of this make, a one-spindle sold at \$112.50 to \$300, according to condition; a two-spindle at \$212.50 and \$237.50, and a three-spindle at \$162.50 to \$275, the Kingsbury Mfg. Co., Keene, N. H., getting the low-priced ones and Chandler & Farquhar and the Pacific Mills the high-priced. The Pacific Mills purchases are for replacement, no new construction being contemplated. Leland-Gifford two-spindle bench type sensitive drills sold to the Saco-Loewel Shops, Boston, at \$200.

One Colburn D2 heavy duty upright drill went for \$1,175, and another for \$1,100. W. F. & John Barnes 24-in. uprights went at \$225, \$350 and \$362.50. Crowell & Thurlow, Boston, shipping interests, bought a Hoefler 24-in. upright for \$200, and \$200 was paid for a 26-in. by other interests. A Weigel 24-in. machine also brought the same price.

Turret lathes, in most cases, brought good prices. A Potter & Johnston 25-in. swing semi-automatic was taken at \$1,350, and 21-in. machines that originally cost \$1,600 went for \$300 and \$350. The Pacific Mills took a Warner & Swasey No. 2.8 semi-automatic with a 16-in. swing for \$1,300, the inventory cost of which was \$1,865, and today would probably bring \$2,700 to replace. The same company also purchased for \$900 an Acme semi-automatic with a 25-in. swing that cost \$1,772. A Gisholt machine, 25-in. swing, inventoried at \$3,300, sold at \$900, and a 21-in. swing inventoried

at \$3,699 sold at \$600. A Hartness semi-automatic flat turret, 10-in. swing, which to replace today would cost about \$3,000, changed hands at \$700, and Hill, Clark & Co. bought for a customer a Gisholt, 21-in. swing at \$450. Other 21-in. Acme tools brought \$600 and \$650.

Prices on screw cutting engine lathes varied because of the large number for sale and the conditions of the machines. A Newark dealer purchased for \$1,650 a Lodge & Shipley motor-driven tool which can be changed to a belt driven with a 32-in. swing and 24-in. raise, the original cost being about \$3,100. This was considered one of the best sales. A New Haven Mfg. Co. 17-ft. lathe with 33-in. swing, a type that has not been built for some time, sold at \$625. Many screw engine lathes were taken by dealers at the following prices:

American, 20-in. x 10-ft.....	\$975.00
Whitcomb-Blaisdell, 18-in. x 10-ft.....	625.00
American, 22-in. x 10-ft.....	637.50
Lodge & Shipley, 20-in. x 6-ft.....	575.00
Le Blond, 18-in. x 6-ft.....	550.00
American, 17-in. x 7-ft.....	537.50
American, 16-in. x 8-ft.....	537.50
Whitcomb-Blaisdell, 19-in. x 9-ft.....	525.00
Reed-Prentice, 19-in. x 9 ft.....	500.00
Monarch, 15-in. x 6-ft.....	312.50
Mulliner, 15-in. x 7-ft.....	475.00

Several Stark Tool Co. bench precision lathes sold at prices ranging from \$105 to \$125 each. A Star No. 10 speed lathe with 10-in. swing went to the Pacific Mills for \$150.

J. Barbour Machine Shop Equipment Corporation, Boston, for a customer, bid \$2,700 for a Cincinnati 36 x 36-in. planer, which originally cost approximately \$3,800 and today would bring \$8,000. A Cincinnati medium pattern 30 x 30-in. planer, originally costing \$1,500, sold at \$1,650 to the Lincoln Machine Co., Pawtucket, R. I. The Pacific Mills purchased for \$900 each two Gould & Eberhardt 20-in. crank shapers, costing today about \$1,700 each.

The Industrial Machinery Corporation, Jersey City, bought a No. 64 Fellows automatic gear shaper for \$1,050; four No. 612 gear shapers, of the same make, at \$1,050 each, as well as an Ingle gear tool rounding machine with a capacity up to gears 12-in. in diameter, for \$375. The Brownell Machinery Co., Providence, R. I., obtained for \$1,350 a Gleason bevel gear generating machine which was sold to the Nelson Blower & Furnace Co. in 1917 for \$2,500. One of the company's creditors bid in a Flather automatic gear cutter, with capacity of 24-in. diameter gears, at \$1,325, while the Lapointe Machine Tool Co., New London, Conn., bought one of its own No. 3 broaching machines for \$300. Mr. Metzler took another No. 3 Lapointe at the same figure. The Boston Gear Works, Norfolk Downs, Quincy, Mass., purchased a Lees-Bradner spur hobbing machine for \$775, and a Schuhrhardt & Schutte automatic hobber for \$450, all in good condition.

Some automatic screw machines brought good prices. A Windsor Machine Co. Gridley automatic, which cost the defunct company \$2,400, sold for \$1,700. The Addressograph Co. purchased a No. 2 Brown & Sharpe automatic for \$1,200, a No. 0 for \$1,000, and No. 00 for \$800, while the Saco-Lowell Shops took a No. 00 at \$850. The Boston Gear Works bought a Cleveland automatic for \$500 and Mr. Metzler another for \$475. These machines when new cost \$1,275.

An effort has been made only to touch on a few of the many high spots at this auction, which is the most important event in the New England machine-tool market for several months.

The local machine-tool market has been decidedly quiet. The General Electric Co., West Lynn, Mass., has under consideration two or three small lots of equipment, but it is doubtful if any action will be taken until after the first of the year. Leading textile machinery makers are not interested at present in new tool equipment. The Boston & Maine Railroad, which a week or so ago issued a list of shop equipment, for the purpose of getting cost estimates, has made no further move and other New England railroads are not in a position financially to make expenditures for machine tools. It is hoped that the proposed equipment note issue of the New York, New Haven & Hartford Railroad will result in placing some orders for needed machinery. As far as can be learned prices are unchanged. Dealers admit, however, there might be some shading if active prospects came to light.

The announcement in the daily press by the Graton & Knight Mfg. Co., Worcester, Mass., of a reduction on all grades of leather belting, averaging approximately 13 per cent, is considered significant by some of the users of machine tools.

The market for small tools remains quiet. A large number of new tools, in original packages, and a far greater number of used tools in excellent condition, went at extremely low prices at the Nelson company auction.

It is believed that the peak in prices for commercial motors has been passed, another feature to be reckoned

with in the machine tool industry. While the gross sales per week of the General Electric Co. are running less than \$5,000,000, the motor end of its business has slowed up materially, and departments in other New England motor making establishments are either working on reduced time or with fewer employees. Numerous cancellations have been received for large motors. Manufacturers have plenty of orders for small motors on their books, however.

Plans for the \$3,000,000 Boston Elevated Railway Co. car repair shop to be built at Everett, Mass., are completed. Bids will be taken early next spring.

Sketches of a proposed two-story and basement, 50 x 100 ft. plant, having an estimated area of 16,000 sq. ft., are being submitted to the Harkins Machine Co., Allston District, Boston.

A portion of the buildings formerly occupied by the Hartford Automotive Parts Co., Hartford, Conn., has been leased by the Westinghouse company as a service station. E. A. Buckmaster has been made manager of this department.

The plant of the Clark Castor Co., Plainville, Conn., on Broad Street has been sold to Henry C. Baum, who will operate it as an electroplating and buffing establishment. It includes 14 acres in addition to the buildings. The main plant is two stories.

The Lock Fastener Co., Worcester, capitalized for \$150,000, recently incorporated under Massachusetts laws, proposes to manufacture wire specialties, including fasteners, but is not yet ready to make public its plans. It owns a formula for tinning and enameling snaps. Charles G. Houghton, 33 Highgate Street, Boston (Allston District), is president, and Charles A. Lakin, 507 Main Street, Worcester, treasurer.

Plans are being drawn by the American Can Co., New York, for works to cost approximately \$250,000 to be erected in South Boston.

The foundry of the Concord Axle Co., Penacook, N. H., was destroyed recently by fire. It will be rebuilt, probably next spring.

The Fitchburg Enamel Co., Fitchburg, Mass., will build a one-story mill construction addition, 92 x 103 ft., to its plant on Culler and Briar streets.

The International Steel Toy Co. is looking for a plant with spur track facilities as a temporary location. It is the intention to erect a building when costs are cheaper. L. A. Charlton, 7 Water Street, Boston, and Arthur C. Pearce, 543 Boylston Street, are interested in the company.

The Spafford Machine Screw Works, Inc., Hartford, Conn., has been organized, with a capital stock of \$50,000. Frederick L. Spafford, West Hartford, is president and treasurer; Claude Creighton, Hartford, vice-president, and Earle E. Crommett, secretary; T. H. Creighton, Waterbury; L. L. Ensworth & Sons, Hartford; Ezra B. Wood, New Haven; William H. Long, West Hartford, and Francis S. Murphy, West Hartford, are also stockholders. The company contemplates going into the production on a larger scale of all classes of turned and machined parts for airplanes, automotive machinery, clocks, guns, etc., and recently made provisions for a larger output.

The Empire Knife Co., Winsted, Conn., has increased its capital stock to \$175,000, part of which has been taken by New York interests. The officers are: President, George M. Brill; vice-president, Nelson H. Genung; secretary, Charles L. Alvord; treasurer, John H. Barr, general manager, D. F. Alvord.

The George B. Wuesterfeld Co., New Haven, Conn., operating a general machine works for automobile repairs, parts manufacture, etc., has increased its capital from \$100,000 to \$300,000.

The Essex Sheet Metal Works, Lynn, Mass., has acquired a building at Federal and Marion streets which will be altered and improved, and occupied by the new owner at an early date, providing increased facilities.

Edward H. P. Green, South Dartmouth, Mass., has awarded a contract to F. P. Sittare, 111 Willis Street, New Bedford, Mass., for a one-story machine shop.

The Morris Metal Products Corporation, Bridgeport, Conn., has increased its capital to \$4,000,000.

The Skinner Chuck Co., New Britain, Conn., will call a meeting of stockholders at an early date to approve an increase in outstanding stock from \$225,000 to \$450,000, with total increase in capitalization to \$750,000. It manufactures chucks, vises, machine devices, etc.

The Bridgeport Screw Co., Union Avenue, Bridgeport, Conn., has completed plans for the construction of a new steel runway and monorail system for crane service.

The Pitney Bowes Postage Meter Co., Stamford, Conn., manufacturer of machine devices, has increased its capital from \$15,000,000 to \$20,000,000.

The one-story addition now in course of erection at the plant of the Walker & Pratt Mfg. Co., Cypress Street, Watertown, Mass., manufacturer of house boilers, heaters, etc., will be equipped as a foundry. It will be one-story, brick and steel, 121 x 130 ft., and is estimated to cost about \$75,000.

The New Bedford Shuttle Co., 24 Elm Street, New Bedford, Mass., manufacturer of textile equipment, is considering the erection of a new three-story plant at Rockdale Avenue and Maxfield Street.

The American Card Clothing Co., 93 Brafton Street, Worcester, Mass., manufacturer of beamers and other textile mill equipment, has awarded a contract to G. B. Cutting, 67 Cedar Street, for the erection of a three-story plant, 67 x 170 ft., on Shrewsbury Street, with two ell extensions, to cost about \$150,000.

Fire, Nov. 16, destroyed the building at 63 Federal Street, Beverly, Mass., occupied by a number of industrial companies, with aggregate loss estimated at \$125,000. Individual losses include the Nichols Tool Co., \$12,000, and the W. H. Howard Co., \$21,000, including equipment.

The Somerset Stove Foundry Co., Somerset, Mass., has filed plans for the immediate erection of a one and two-story addition, brick and steel, 70 x 160 ft., to cost about \$50,000.

The Hardware City Mfg. Co., Plainville, Conn., manufacturer of metal products, has changed its name to the Plainville Mfg. Co.

The North & Judd Mfg. Co., New Britain, Conn., manufacturer of saddlery hardware and other metal products, is arranging for an increase in capital from \$2,000,000 to \$3,000,000.

The Somerville Iron Foundry, 88 Washington Street, Somerville, Mass., has taken out a permit for a one-story extension, 30 x 42 ft.

Philadelphia

PHILADELPHIA, Nov. 22.

The American Motor Body Corporation, recently organized to consolidate the Hale & Kilburn Corporation, Eighteenth and Lehigh Streets, Philadelphia, and the Wadsworth Mfg. Co., Detroit, both specializing in the manufacture of steel automobile bodies, has taken over the plant of the Philadelphia interest, and in the future the factory will be operated in this name, with the Hale & Kilburn Corporation as a holding company. The local plant comprises four five-story buildings, a five-story office building, and 13 other one and two-story buildings, with about three acres of land. The American Motor Body Corporation will begin operations with an outstanding capital of \$18,460,200.

The Fox Motor Car Co., Broad and Huntington Streets, Philadelphia, has increased its capital from \$5,000,000 to \$6,000,000.

Fire, Nov. 16, destroyed a portion of the factory building at 811-47 Aramingo Avenue, Philadelphia, occupied by the William Eckbold Sons Co., machinery, and the Artesian Well Co., with loss estimated at \$25,000.

John A. Oak, 434 East Girard Street, Philadelphia, manufacturer of automobile equipment, will build a one-story extension, and make improvements in present building.

Samuel Richman, Philadelphia, has acquired a one-story machine shop and two-story adjoining structure, at Front and Dickinson Streets, for \$36,000.

The Barnes Corporation, Philadelphia, is being organized by Arthur H. Turner, Earl G. Schweindt and Frank J. Whaley, to manufacture tractors, parts and other machinery. Application will be made for a State charter. Edward J. Mingey, 505 Chestnut Street, represents the company.

The Kesting-Kopp-Keyser Co., 1105 Spring Garden Street, Philadelphia, manufacturer of wire products, has leased the three-story building at 47 North Sixth Street for new works.

The Ford Motor Co. of Delaware, Philadelphia, has taken title to the local plant of the Ford Motor Co., heretofore operation by the Michigan corporation as a branch works. It is ten stories, with site 231 x 320 ft., and has an assessed valuation of \$500,000.

E. J. Stoeser, Philadelphia, formerly connected with the Philadelphia Paper Mfg. Co., Philadelphia, with present address 3231 Penn Street, is organizing the Stoeser-Wier Co., to manufacture automobile tires and other specialties. Application will be made for a State charter. L. W. Wier is also interested in the organization.

The Erie Avenue Auto Supply Co., Philadelphia, has taken

title to property at 3654-58 Erie Avenue, at Seventh Street, 72 x 84 ft., to be used in connection with its works.

Hare's Motors, Inc., Trenton, N. J., has acquired the Kelly-Springfield Motor Truck Co., Springfield, Ohio, and the business will be operated as a branch organization in conjunction with the Mercer Automobile Co., Trenton; Simplex Automobile Co., New Brunswick, N. J.; and the Locomobile Co., Bridgeport, Conn., all controlled by the Hare organization. Emlen S. Hare is president.

George Garnet, Allentown, Pa., manufacturer of sanitary appliances, has broken ground for a new one-story plant, 66 x 146 ft., at New and Summer Avenues.

The Lehigh Valley Railroad Co., Allentown, Pa., has acquired at public sale a tract 460 acres, between Allentown and Bethlehem, known as the Allentown City Farm, for \$142,500. It will use a portion of the property for a new terminal, shops, freight houses and other buildings. It is said that the present shops at Packerton, Pa., will be removed to the new location.

The Wales Adding Machine Co., Kingston, Pa., has increased its capital from \$1,000,000 to \$3,000,000.

The Frick-Geiser Co., Waynesboro, Pa., has been organized with a capital of \$3,000,000 to take over the local plants and businesses of the Frick Co., West Main Street, and the Emerson-Brantingham Co., East Second Street, both specializing in the manufacture of agricultural implements and machinery, including tractors, road rollers, threshers, etc. Only the light machinery end of the Frick Co. business will be taken over, and the Emerson-Brantingham Co. reserves the right to manufacture tractors, production of which will be transferred to the main works at Rockford, Ill., or other of its Western plants. The acquisition becomes effective on Dec. 4.

Pittsburgh

PITTSBURGH, Nov. 22.

Activities in the machine-tool market in this district still are of limited proportions and it is stated that prices, more than any other factor, are holding up the placing of a fair amount of business. The Pittsburgh Tube Co. is rebuilding its plant at Monaca, Pa., recently burned, and has placed an order with a local dealer for four cutting-off machines and two grinders. The crane market is extremely quiet and sales few and far between. However, numerous inquiries are being made by steel companies in this district for cranes and other equipment. Inquiries received by one company represented here aggregate 16, while the same concern also has been requested to submit prices for estimating purposes on two more cranes. The International Nickel Co., which has started work on the new rolling mill for turning out Monel metal bars and sheets at Huntington, W. Va., is in the market for seven cranes and four hammers. No change is noted in prices, but competition for business is keen. Comparatively early deliveries are being promised by some crane makers.

The Sigwart & Rolston Machine Works, Inc., 341 Second Avenue, Pittsburgh, manufacturer of machinery and parts, has acquired the brick building at 1812-14 Sheffield Street, 35 x 138 ft., for \$15,000, for extensions. Possession will be taken immediately.

At a meeting of stockholders of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Nov. 18, approval was given to an increase in capital from \$75,000,000 to \$125,000,000. Its subsidiary organization, the Westinghouse-Union Battery Co., now occupying three floors in a building at the plant of the Union Switch & Signal Co., Swissvale, Pa., is said to be perfecting plans for the erection of new works on adjoining property, to provide about three times the present capacity.

The National Drawn Tube Co., Pittsburgh, is being organized by Perry L. Tygard, John Porreca and Frank Wilbert, Jr., to manufacture steel tubing and other tubular shapes. Application will be made for a State charter. Wilbert & Wymard, 331-2 Frick Building, represent the company.

The Pittsburgh Piping & Equipment Co., Thirty-fifth and Charlotte streets, Pittsburgh, manufacturer of piping, steam fittings, etc., has increased its capital from \$300,000 to \$1,000,000.

The Benner Tool Co., Ormond Street, Swissvale, Pa., manufacturer of axes and other edge tools, has acquired adjoining property, comprising 38,735 sq. ft., for \$23,236, to be used for extensions.

The Heppenstall Forge & Knife Co., Forty-seventh Street and the Allegheny Valley Railroad, Pittsburgh, manufacturer of iron and steel forgings, etc., is negotiating for the purchase of property in the Ninth Ward, to be used in connection with its operations.

The Vokelhorne Corporation, Brownsville, Pa., has been incorporated, with a capital of 500,000, by B. F. Frieble and John Matta, Brownsville, and Adam Erdman, Uniontown,

Pa., to manufacture equipment and devices for automobile service.

The Frank Husband Co., Pittsburgh, is being organized by W. W. McAdams, E. C. McHugh, R. T. Russell and associates, to manufacture machinery and parts. Application will be made for a State charter. Reed, Smith, Shaw & Beal, 747 Union Arcade, represent the company.

The Fordlette Engine Co., Huntington, W. Va., recently organized with a capital of \$100,000 to manufacture gas and gasoline engines, is planning for the erection of new one-story works, 50 x 150 ft., with machine shop department estimated to cost about \$25,000. H. L. Grimm is secretary and treasurer.

The Monticello Smokeless Coal Co., Monticello, W. Va., will build a new coal tippie at its properties.

The Davis-McCloy Co., Pittsburgh, is being organized by Charles and Elliott Davis, and John H. McCloy, to manufacture railroad equipment and other iron and steel products. Application will be made for a State charter. J. J. Goldsmith, 921 Frick Building, represents the company.

The Ralco Coal Co., Beckley, W. Va., recently organized, is planning for the immediate erection of a tippie at its properties. M. B. Hoffman is president and general manager.

Fire, Nov. 16, destroyed a portion of the building of the McLean & McGinness Co., 1427-29 Liberty Avenue, Pittsburgh, hardware products, with loss estimated at \$200,000. A portion of the structure was used as a wagon shop.

The Simmons Co., Kenosha, Wis., manufacturer of brass and iron bedsteads, springs, etc., has increased its recently acquired property holdings on River Avenue, Northside, with the purchase of a site 22 x 100 ft., near Madison Avenue. It will be used for a new local works, estimated to cost about \$100,000.

The Valley Steel Products Co., Pittsburgh, is being organized by William Conway, Jr., George W. McCandless and E. C. Chalfant, to manufacture iron and steel products. Application will be made for a State charter. Wright, Chalfant & McCandless, Frick Building, represent the company.

The South Hills Hardware Co., Pittsburgh, has filed plans for a four-story building, 52 x 75 ft., on Warrington Avenue, near West Liberty Avenue, to cost about \$40,000.

The Dixie Storage Battery Co., Charleston, W. Va., has been incorporated with a capital of \$100,000 by A. E. Hayes, Roy Pennywitt and Andrew Gardner.

The Reserve Motor Car Co., 168 Warren Avenue, Youngstown, has acquired property at Leavittsburg, Ohio, for a new plant. L. C. Heckle is head.

Buffalo

BUFFALO, NOV. 22.

The New York Car Wheel Co., 15 Forest Avenue, Buffalo, has filed plans for a two-story addition, 34 x 100 ft., on Forest Avenue. John Schaaf, Mutual Life Building, is contractor.

The De Laney Forge & Iron Co., Inc., 300 Perry Street, Buffalo, has called a special meeting of stockholders on Dec. 3, to approve plans for a dissolution of the company.

The New Era Toy Mfg. Co., Buffalo, manufacturer of mechanical toys, etc., has increased its capital from \$10,000 to \$50,000.

The Robertson-Cataract Electric Co., 151 West Mohawk Street, Buffalo, manufacturer of electrical apparatus, has called a special meeting of stockholders on Nov. 30, to approve an increase in capital from \$1,500,000 to \$3,000,000. J. D. Robertson is president.

The Smith Wheel Co., 1100 North Geddes Street, Syracuse, N. Y., manufacturer of automobile wheels, has commenced the erection of the superstructure for its two-story addition, 40 x 106 ft., to cost about \$25,000.

The Nu Era Paper Co., Hadley, N. Y., has awarded contract to the H. P. Cummings Construction Co., Ware, Mass., for a brick and steel addition to the machine shop. Alterations and improvements will also be made in the present building. The work is estimated to cost \$100,000.

The Crane Co., Broadway, Buffalo, manufacturer of steam piping and specialties, valves and fittings, etc., has had plans prepared for the erection of a one-story extension, 40 x 150 ft., on Exchange Street.

The Artisan Sheet Metal Corporation, Rochester, N. Y., has been incorporated with a capital of \$15,000 by J. Kothiringer, E. and W. Bohrer, all of Rochester, to manufacture sheet metal and other kindred products.

The Dunkirk Axle Corporation, Dunkirk, N. Y., has been incorporated with an active capital of \$787,500 by A. A. Kessler, A. N. Ellis and J. A. Young, Dunkirk, to manufacture truck axles and kindred products.

The J. I. Case Threshing Machine Co., Inc., 360 West

Jefferson Street, Syracuse, N. Y., manufacturer of agricultural machinery, has commenced the erection of the superstructure for its two-story addition, 100 x 150 ft., at the corner of Jefferson and West streets, estimated to cost about \$90,000.

The City Council, Watertown, N. Y., is having plans prepared for the construction of a municipal hydroelectric power plant, 45 x 168 ft. Paul B. Sutton is city and consulting engineer.

Chicago

CHICAGO, NOV. 22.

The Santa Fe has made the following additions to the inquiry for its Albuquerque, N. M., shops, published last week. In the case of almost every machine alternate figures on belt and motor-driven arrangement are asked for. All quotations are to be made on the basis of delivery in June, 1921.

Additions to Santa Fe List

One 250-ton press for pressing locomotive piston rods out of piston heads and crossheads.
Two vertical high power drilling machines, Coburn No. 4 or equivalent.
One 36-in. x 36-in. x 12-ft. heavy duty planer with two heads on cross rail.
Three 18-in. x 6-ft. engine lathes for tool room work.
Three 36-in. upright drill presses, heavy construction, Barnes or equivalent.
One double head bolt cutter, capacity up to 2-in.
Two portable 16-in. x 6-ft. engine lathes.
Four 53-in. Bullard vertical turret lathes.
One 52-in. heavy duty coach wheel tire turning lathe.
Six 18-in. x 12-ft. heavy duty engine lathes.
One 3-ft. plain heavy duty radial drilling machine.
One 16-in. heavy duty slotter.
Four 24-in. heavy duty crank shapers.
One horizontal slab milling machine for milling locomotive rod brasses, table 24 in. wide, 36 in. under housing and 8 ft. long.
One 60-in. x 14-ft. engine lathe.
One slab milling machine, 36 in. high, 42 in. wide, and 10 ft. table.
Four 24-in. x 12-ft. engine lathes.
One 20-in. x 7-ft. brass turning lathe.
One 48-in. x 48-in. x 16-ft. planer.
Two 60-in. heavy duty boring mills with two heads on cross rail.
One 28-in. double head shaper.
One 30-in. draw cut shaper.
One 48-in. x 14-ft. engine lathe.
One No. 9 Pond vertical milling machine, or equivalent.
One six-spindle combined turning and threading machine for crown and side staybolts.
One 2½-in. capacity four-spindle bolt turning machine, Lasker type.
Two cabinet turret lathes for work on brass locomotive parts, 20-in. swing, 7-ft. bed.
One 2½-in. six-spindle nut tapper.
Two emery grinders for grinding locomotive guides.
One Libby-type turret lathe with 7½-in. hole.
One power-driven hacksaw for tool room work capable of cutting tools up to 6 in. in diameter.
One locomotive piston rod grinding machine capable of turning pistons of a maximum diameter of 39 in. and maximum length of 90 in.
One horizontal drill press, Pawling & Harnischfeger No. 11 or equivalent.
One cold saw for sawing locomotive axle billets.
One Cincinnati No. 3 universal milling machine or equivalent.
Four upright sensitive drill presses with 24-in. swing.
Two 3½-in. x 36-in. turret lathes.

Except for the above inquiry, the market remains generally dull. Now and then an order for several machines is booked, as for example a recent sale of a lathe, drill press, grinding machine, shaper and miscellaneous equipment amounting to about \$12,000. Orders of this kind are noteworthy at present, however, principally because they are exceptional.

Word brought back from the convention of machine tool builders indicates that sentiment of manufacturers is rather generally opposed to a reduction in prices. The principal item of cost in a machine tool, it was pointed out, is labor and the prospects of a material reduction in wages are not bright. It is agreed by local observers that before a resumption in buying can be induced the consumer must be convinced of the stability of prices. It is evident that users are not now convinced of that fact and the concessions offered of late by a few builders have only served to confirm the belief of the former that lower prices are in sight. Undoubtedly the main reason for present sentiment among consumers is the fact that other commodity prices are falling and it is felt that machine tools cannot stand alone. The peculiar conditions which builders point to as blocking a material reduction in costs are not yet generally appreciated.

The period of cancellations and requests for suspensions is apparently about over, and in this respect the market situation has improved. Collections, however, are still troublesome.

The Illinois Malleable Iron Co., 1801 Diversey Boulevard, Chicago, will award contract through T. J. Saridakis, 64 West Washington Street, for a one-story boiler and engine house, 90 x 100 ft., to cost, exclusive of equipment, \$150,000.

The Union Bed Spring Co., 1100 Blackhawk Street, Chi-

gago, is considering bids on the remodeling of a two-story warehouse and factory, 125 x 600 ft., at Colorado and Keotner avenues, at an estimated cost of \$175,000.

The Universal Machine & Tool Corporation, 4446-52 West Taylor Street, Chicago, has let contracts for a one-story plant, 50 x 115 ft., at 919-21 South Keeler Avenue, to cost \$16,000.

The Crane Co., 836 South Michigan Avenue, Chicago, has let a contract for a one-story foundry addition, 80 x 112 ft., 427-27 South Desplaines Avenue, to cost \$25,000.

The Checker Taxi Co., 608 South Paulina Street, Chicago, has purchased from the Pioneer Truck Co. a one and two-story building at 4638-48 West Madison Street, 125 x 175 ft. and will occupy the premises as its main station, garage, repair shop and office. The seller is moving to a new plant at Valparaiso, Ind.

The B. & V. Motor Co., Eleventh Avenue and Seventh Street, East Moline, Ill., has been incorporated, with \$6,500,000 capital stock, by C. J. Horn, F. H. Black and H. M. Phillips, to manufacture motors, appliances, etc.

The Martin Metal Products Co., 62 South Cherry Street, Galesburg, Ill., has been incorporated, with \$60,000 capital stock, to manufacture farm machinery. Organizers include J. A. Martin, Fred E. Hazlett, Roy Burnside, George Craig and L. W. Bassett.

The Standard Boiler & Tank Co., 624 West Forty-second Street, Chicago, has been incorporated, with \$2,000 capital stock, by Grover C. McClaren, Eldon J. McGuire, and Frank Markey, to manufacture boilers, tanks, etc.

The Inland Specialty Co., 1460-62 North Robey Street, Chicago, has been incorporated, with \$25,000 capital stock, by M. Spoland, N. L. Wellins, and F. O. Singer, to manufacture electrical and mechanical toys.

The Whitney Bearing Corporation, 536 Lake Shore Drive, Chicago, has been incorporated, by Julius Keller, Sr., Harry Keller and Francis X. Busch, to manufacture bearings, tractors, trucks, etc.

The E. A. Schultz Mfg. Co., 1807 Belmont Avenue, Chicago, has been incorporated, with \$35,500 capital stock, to manufacture machinery, trucks, tools, etc. Organizers include E. M. Scher, Thomas Moore and Richard Schultz.

The National Malleable Castings Co., East St. Louis, Ill., is completing plans for a one-story addition, to cost about \$150,000. Contract for a crane runway system has been let to Kelly Brothers, Twentieth and State streets.

The American Rubber Co., 1526 South Wabash Avenue, Chicago, will soon call for bids for its new two-story plant at Centralia, Ill., 80 x 500 ft., and estimated to cost about \$500,000. W. W. Cooper is secretary.

The Avery Co., Peoria, Ill., manufacturer of agricultural implements, motor trucks, etc., has arranged for a note issue to total \$3,000,000. J. B. Bartholomew is president.

The Illinois Malleable Iron Co., 1801 Diversey Boulevard, Chicago, is taking bids for a one-story power plant, 89 x 100 ft., to cost about \$175,000, including equipment. W. J. Akln is vice-president and treasurer.

The Arkansas Valley Railway, Light & Power Co., Pueblo, Col., has arranged for a bond issue of \$1,400,000, the proceeds to be used for extensions to electric generating plants, systems, etc. Otto E. Osthoff is vice-president.

An engine plant, 20 x 38 ft., and power house, 32 x 48 ft., will be constructed by J. Klich, South California Avenue and West Twentieth Street, Chicago, at his new furniture manufacturing plant, estimated to cost about \$100,000.

Cincinnati

CINCINNATI, Nov. 22.

The machine tool market continues dull, the volume of new business being very light. Dealers, however, state that during the week more inquiries were received than for some time and several have developed into orders. One sale consisted of three tools to a Kentucky manufacturer with prospects of three more later. Railroad business is quiet, the only inquiries figured on being from the Santa Fe and the Big Four. A number of manufacturers state that shipping instructions have been received for tools held up, and that requests for shipment after the first of the year are beginning to come from companies catering particularly to the automobile trade. Some local manufacturers are guaranteeing prices against declines until April 1, 1921, when requested by purchasers. A revival in the machine-tool industry is expected during the winter, and while the feverish activity of the past few years is not looked for, manufacturers are confident that a good, steady business is before the trade.

The Eureka Tackle Block Co., 324 East Second Street, Cincinnati, has been incorporated with a capitalization of \$250,000 by C. W. Potter, B. A. Pursell, F. J. Noll, A. D.

Fisher and C. M. Carter. Future plans have not been made known.

The Haven Malleable Castings Co., Dana and Knowlton avenues, Cincinnati, has been authorized to increase its capitalization from \$100,000 to \$200,000. No extensions to the plant are contemplated at this time.

The Hodges Stucco Machine Co., Colerain Avenue, Cincinnati, will increase its capitalization from \$10,000 to \$50,000, to take care of its growing business.

The Nemeth Research & Mfg. Co., Dayton, Ohio, has increased its capitalization from \$10,000 to \$200,000.

The W. E. Lamneck Co., West Fifth Avenue, Columbus, Ohio, manufacturer of heating and ventilating apparatus, has completed plans for a one-story plant, 120 x 200 ft., to cost about \$50,000. A. P. Lamneck is secretary and treasurer. Bids have been asked.

The Perkins-Campbell Co., 622 Broadway, Cincinnati, manufacturer of automobile specialties, saddlery products, etc., has completed plans for a top addition, 35 x 87 ft., at 414 New Street, to cost about \$25,000.

The Columbiana Boiler Co., Columbiana, Ohio, has arranged for the immediate erection of a one and two-story addition, to cost about \$50,000. J. Borrow is treasurer and general manager.

The Ladel Mfg. Co., New Philadelphia, Ohio, manufacturer of metal and machined specialties, is completing plans for the erection of a new one-story building, 85 x 300 ft., to cost about \$70,000.

The Pierce, Butler, Pierce Mfg. Co., Syracuse, N. Y., manufacturer of boilers, radiators and other equipment, is considering the erection of a new plant in the vicinity of Ashtabula, Ohio, to cost in excess of \$500,000.

The National Lime & Cement Co., Carey, Ohio, will build a new power house.

The Superior Castings Co., Dayton, Ohio, has construction under way on a one-story foundry addition, 30 x 140 ft., at Perry and Prairie streets.

Cleveland

CLEVELAND, Nov. 22.

Local machine tool builders are figuring on a large amount of production machinery for the Waukesha Motors Co., Waukesha, Wis. The minimum estimate is \$100,000 and it is expected that purchases will be made within a week or two. An inquiry has come from the American Steel & Wire Co. for 21 machines, mostly large sizes, for its Cuyahoga Works, Cleveland. With these two inquiries the market shows more life than in many weeks, although some dealers report a slight improvement in single tool inquiries. The Hart Mfg. Co., Cleveland, is inquiring for a number of milling machines, and the H. J. Walker Co., Cleveland, for several tools, mostly grinders.

With changed industrial conditions a few manufacturers are working on plans to reduce their costs by the substitution of more improved types of machinery than they are now using, and this tendency is bringing out inquiries which are expected to result in orders later. There is some activity in used machines and buyers are able to pick up some attractive bargains.

The list sent out by the American Steel & Wire Co., which specifies machines equipped with direct connected motors, is as follows:

Turret lathe with 21½ in. swing.
36-in. heavy duty engine lathe with 18 ft. bed.
24-in. heavy duty engine lathe with 16 ft. bed.
16-in. heavy duty engine lathe with 18 ft. bed.
14-in. heavy duty engine lathe with 6 ft. bed.
36-in. stroke crank shaper.
Universal milling machine.
Horizontal boring machine with 3 in. to 4 in. diameter spindle.
Full universal radial drill press with 6 in. arm.
Universal grinding machine with 12 in. to 14 in. swing.
14-in. sensitive drill press.
8-ft. vertical turning and boring machine.
Automatic saw grinding machine for 18-in. diameter saw.
Power hack saw to cut 4 in. diameter.
36-in. planer with 8-ft. to 10-ft. table and 2 heads.
Gear cutting machine for cutting mill pinions 20 in. in diameter.
Keyway cutter for cutting 24-in. x 2-in. keyways and to take work 72 in. in diameter.
Portable keyway cutter.
2-in. pipe cutting machine.
Arbor press.
1500-lb. single frame steam hammer.

The Horsburgh Forge Co., Cleveland, will discontinue business and has sold the entire equipment of its forge shop to the Hess-Schenck Co., machinery dealer. It consists of about 50 machine tools, including a number of lathes, 52 in.

and smaller, planers, shapers and other tools, in addition to steam hammers and presses.

The H. K. Ferguson Co., Cleveland, has taken a contract for designing and erecting a new plant for the Walter Motor Truck Co. at Poughkeepsie, N. Y. This company is now located at 227 West Sixty-first Street, New York, but will move its present equipment to Poughkeepsie. The new plant will be one story, steel, concrete and brick, 100 x 300 ft., and will cost approximately \$100,000, exclusive of equipment.

The National Screw & Tack Co., Cleveland, has purchased the business and plant of the Adams-Bagnall Electric Co., Cleveland, manufacturer of small motors, lamp reflectors and fans. W. D. B. Alexander is president of both companies. The management will not be changed. The Adams-Bagnall Electric Co. plant will be operated as the A-B Products Division of the National Screw & Tack Co.

The Ohio Locomotive Crane Co., Bucyrus, Ohio, which recently acquired from the Austin Corporation the good will, patents, etc., covering the line of overhead traveling cranes manufactured by the Toledo Bridge & Crane Co., will add this line to its products and will probably build the cranes at its Bucyrus plant. The Austin Corporation will use the plant of the Toledo Bridge & Crane Co. for making its own products.

The Warren Metal Bedstead Co., Warren, Ohio, has placed a contract for the erection of a plant, 90 x 440 ft. The company has been incorporated, with a capital stock of \$50,000.

The Wellman Products Co., 1444 East Forty-ninth Street, Cleveland, has erected extensions doubling its floor space. The additional area will be devoted largely to its turret lathe and screw machine departments.

It is reported from Mount Vernon, Ohio, that the C. & G. Cooper Co. is planning to erect a foundry and machine shop.

The Mark Mfg. Co., Zanesville, Ohio, is planning a factory, 80 x 160 ft.

Detroit

DETROIT, NOV. 22.

Slightly improved conditions in the truck section of the automotive industry have aroused a new note of optimism among local machine tool dealers. While market conditions show little change, it is felt that some new business is in sight and that by the beginning of the year the upturn will begin to make itself felt.

The Dodge Brothers automobile plants were closed from Nov. 15 to 22 to overhaul machinery and make changes preparatory to an increased production schedule, according to announcement by officials of the company. A small amount of new machinery was added.

The Page Steel & Wire Co., Adrian, Mich., and Monessen, Pa., has taken over the tube business of the Connecticut Tubing Co. and the equipment has been moved to the Adrian plant, providing increased facilities for the manufacture of welded steel tubing.

The Ideal Engine Co., Lansing, Mich., has purchased the plant of the Lansing Body Co., formerly the Lansing Wagon Works, and will manufacture power lawn mowers in the new premises.

The United Automotive Body Co., Springboro, Pa., will establish an assembling plant in Lansing, Mich., for Oldsmobile and Reo passenger and truck bodies. A warehouse has also been leased with 27,200 sq. ft. of floor space.

The manufacture of a new clutch for Ford trucks will soon be started at Capac, Mich., the invention of Cory Leach of Capac.

The Champion Ignition Co., Flint, Mich., states that the opening of its Canadian plant in Brantford, Ont., has been postponed indefinitely.

A branch factory of the Homer Furnace Co., Coldwater, Mich., will be started at Oldsmar, near Tampa, Fla.

The Motor City Stamping Co. of Detroit plans the erection of a one-story factory, 80 x 90 ft., to cost about \$70,000.

The General Machine & Iron Works, Detroit, plans the erection of an addition, one story, 40 x 100 ft., to cost about \$60,000.

The Detroit Rock Salt Co., Oakwood, Mich., will build a boiler house and power plant, 38 x 45 ft.

The Alma Foundry & Mfg. Co., Alma, Mich., recently organized, with a capitalization of \$50,000, has obtained a factory building, which is being remodeled.

The Wright-Fisher Bushing Corporation, Detroit, has been incorporated by W. Renen, 457 Winfield, Avenue, Eugene

Greenfield and Muriel M. Boitt, with a capitalization of \$75,000, to manufacture machine products.

The Universal Co., Detroit, has been incorporated, with \$30,000 capital stock, by Harry Grass, 1465 Grand River Avenue, and Philip and Harry Breitmeyer, Detroit, to manufacture machine shop products.

The Willard Multitool Mfg. Co., Lansing, Mich., which will establish a plant for the manufacture of blades and adjustments for special agricultural tools, advises that it has a capital stock of \$100,000 and not \$10,000, as previously stated. G. D. Willard is president; H. B. Gregory, vice-president, and W. S. Sly, secretary and general sales manager.

The Frost Gear & Forge Co., Jackson, Mich., has taken out a permit for an addition to its hammer shop, and a one-story extension to the boiler house, to cost about \$25,000. E. J. Frost is president.

The Cheboygan Metal Products Co., Cheboygan, Mich., has been incorporated, with a capital of \$60,000, by D. J. McDonald, M. J. Cain and R. W. Lund, Cheboygan, to manufacture automobile parts and automotive equipment.

The Michigan Body & Motor Co., Grand Rapids, Mich., is the new name under which the Michigan Hearse & Motor Co. will operate in the future, with capital of \$150,000. The present line of automobile body and motor production will be continued.

The Sauzedde Mfg. Corporation, Evans and Rose streets, Mount Clemens, Mich., manufacturer of wire wheels, is making a list of equipment to be installed in its new unit, plans for which are being prepared. The structure will be two stories, brick and steel, and is estimated to cost about \$75,000.

The Patterson-Cosgrain Mfg. Co., Ann Arbor, Mich., has been organized to manufacture metal stampings, drop forgings and kindred specialties. Wilfred V. Cosgrain and Robert R. Patterson, 2101 Hill Street, head the company.

The Detroit Belt Lacer Co., A Street, Detroit, will defer the erection of its new building until spring. A site has not yet been secured.

The Gulf States

BIRMINGHAM, NOV. 22.

The Alabama Power Co., Birmingham, is perfecting plans for its new hydroelectric power plant on the Coosa River, to have an initial generating capacity of about 50,000 hp., with provision for increasing this to 120,000 hp. at a later date. It will be operated in conjunction with the company's present generating station, about 14 miles from the selected site. Thomas W. Martin is president.

The Linde Air Products Co., 30 East Forty-second Street, New York, manufacturer of acetylene apparatus, is completing arrangements for a new one-story plant at New Orleans, La., 125 x 125 ft., steel and reinforced-concrete, to cost about \$300,000, including equipment.

The Bay Shore & Texas City Traction Co., Houston, Tex., has increased its capital from \$300,000 to \$1,000,000, the proceeds to be used for the construction of a new interurban electric railroad from Houston to Texas City, a distance of about 45 miles. It will also establish a general mechanical works, including machine shop, etc., for construction and repairs. Edward Kennedy is president.

The Lehigh Portland Cement Co., Allentown, Pa., is perfecting plans for a branch plant at Tarrant City, near Birmingham, Ala., to cost about \$3,000,000, including machinery. The initial works will have an annual capacity of about 1,000,000 bbl. The company has acquired about 250 acres for the new plant.

The Falfurrias Machine Co., Falfurrias, Tex., is planning to rebuild a portion of its works, recently destroyed by fire, with loss of about \$25,000.

Electric traveling cranes, hoisting and conveying equipment and general coal handling apparatus will be installed at the new coal terminal to be constructed at Mobile, Ala., by the Alabama Harbor Commission, Montgomery, on Blakely Island, Mobile River, estimated to cost about \$400,000, with machinery. Murray Brown is president of the commission.

T. B. Slaughter, Amarillo, Tex., and associates, have preliminary plans under way for a new hydroelectric power plant at the Palo Duro Canyon, about 20 miles from the city, estimated to cost about \$1,000,000 with machinery.

D. Souter, 647 St. Mary Street, Baton Rouge, La., and associates, are planning for the erection of new factory for the manufacture of metal products. A site is being selected.

The West Point Mfg. Co., West Point, Ga., will build a

new machine shop at Langdale, Ala., for general textile machinery construction and repairs. L. W. Robert, Atlanta, Ga., is engineer.

The Advance-Rumely Co., La Porte, Ind., manufacturer of agricultural implements and machinery, is planning the erection of branch works in the vicinity of Amarillo, Tex., to cost about \$300,000. It will specialize for the most part in the manufacture of farm tractors and parts.

The United States Engineering Department for the Gulf District, with headquarters at Pascagoula, Miss., will equip a power house and machine shop, and build a marine railroad for shipbuilding and repair work.

The Maximilian Oil Co., New Iberia, La., John A. Madden, secretary, will install 50 and 100-hp. boilers, rotary well drilling machinery and other equipment in its plant.

The Great Southern Lumber Co., and the Bogalusa Paper Co., Bogalusa, La., W. H. Sullivan, vice-president and general manager, will equip four additional units for the manufacture of 125 tons of paper daily in each unit. About \$8,000,000 will be expended.

The Apex Paper Co., New Orleans, La., will equip a mill to cost \$250,000.

Indiana

INDIANAPOLIS, NOV. 22.

The Indiana Refining Co., Columbus, Ind., is having plans prepared for a new one and two-story refinery about three miles from Columbus, to cost approximately \$500,000, including machinery. O. L. Bartlett is president.

Property of the Bull Tractor Co. and the Madison Motor Car Co., Anderson, Ind., and Minneapolis, Minn., including real estate, buildings and equipment, has been acquired by the American Motor Parts Co., Philadelphia, operated by L. Goldstein's Sons, Allegheny Street, near Richmond Street, Philadelphia, for \$120,000.

Following the award of contract for the first unit of its new plant at Kokomo, Ind., the International Engineering & Mfg. Co., 127 North Dearborn Street, Chicago, has decided to hold the project temporarily in abeyance, and only foundation work will be executed at this time. The structure was designed to be one and two-stories, 90 x 200 ft., and estimated to cost about \$75,000. Charles Sanders, Portland, Ind., is the contractor.

The Indiana Rolling Mills, New Castle, Ind., has commenced the erection of a two-story and basement building, 40 x 60 ft., to cost about \$40,000.

The Standard Oil Co., Indianapolis, is planning for the installation of machinery at its plant on Front Street, Whiting, Ind., for the manufacture of welded steel drums.

The J. W. P. Tire & Rubber Co., Indianapolis, manufacturer of automobile tires and other rubber goods, has deferred further erection of its new one-story plant at Scottsburg, Ind., 100 x 200 ft., and estimated to cost about \$50,000. It is proposed to proceed with the work early in the spring. P. H. Wier is president.

The Newburg Light & Water Co., Newburg, Ind., has increased its capital stock from \$20,000 to \$50,000.

The Bimel Spoke & Auto Co., Portland, Ind., has increased its capital stock from \$150,000 to \$250,000.

The O. K. Giant Battery Corporation, East Chicago, Ind., has been incorporated, with \$10,000 capital stock, to manufacture electric storage batteries. The directors are E. W. Wickey, Leo McCormack, B. F. Stone, E. E. Messick and W. F. Speedy.

The Fort Wayne Motor Car Co., Fort Wayne, Ind., has been incorporated, with \$150,000 capital stock, to manufacture automobiles and accessories. The directors are W. J. Piler, J. B. Renshaw, L. F. Crosby, C. G. Nickols.

The George W. Davis Motor Car Co., Richmond, Ind., has increased its capital stock from \$160,000 to \$300,000.

Baltimore

BALTIMORE, NOV. 22.

The Western Maryland Railway Co., Baltimore, has filed plans for the erection of four new industrial buildings at Marshall and McComas streets, one to be equipped as a machine and repair shop.

The National Oil Co., Inc., Keyser Building, Baltimore, has acquired 40 x 201 ft. on Eighth Street, in the vicinity of its plant, and has plans under way for the erection of an addition.

The Pennsylvania Railroad Co., Baltimore, has plans under way for new terminal buildings and repair shops at Hagerstown, Md., to be used by its Cumberland Valley division.

The Red "C" Oil Mfg. Co., Keyser Building, Baltimore, has acquired property on the Key Highway and contemplates the erection of a new refinery on the site. It recently secured options on the plant of the Torsch Packing Co. in this section, but plans for acquisition have been abandoned.

The Mountain City Foundry & Machine Works, Greenville, S. C., is planning the erection of a brick addition, 30 x 50 ft., to its foundry.

The Carolina Steel & Iron Co., Greensboro, N. C., is completing plans for the first unit of its new plant, on property recently acquired. It will be one-story, 110 x 180 ft., and is estimated to cost about \$65,000. W. C. Boren is president.

The International Aluminum Co., Americus, Ga., recently organized, is planning for the construction of a reduction plant on property recently acquired in Sumter County, consisting of about 800 acres of land. Headquarters will be maintained at Detroit. J. S. Morton, Detroit, is president, and Crawford Wheatley, Americus, secretary and treasurer.

The Bureau of Yards and Docks, Navy Department, Washington, D. C., has completed plans for new shell works, at Kuhna, Hawaiian Islands, under specification No. 4318.

The Coltrane Tire & Rubber Co., Columbus, S. C., is planning to rebuild the portion of its plant recently destroyed by fire, with loss of about \$21,000.

The Citizens' Mercantile Co., Edison, Ga., is planning the erection of a cotton ginning plant, with daily output of about 50 bales, to replace the one recently destroyed by fire. C. Z. Saunders is treasurer and manager.

The Greenwood Body & Wagon Co., Greenwood, S. C., recently organized to manufacture truck and wagon bodies, has arranged for the erection of a one-story plant.

Bids are being asked by the General Chemical Co., Munsey Building, Baltimore, for a new power house in connection with its works at Race and Winder streets.

Plans for the construction of a foundry, 16 x 39 ft., are being made by Ralineck & Braumbart, Pennington Avenue and Beech Street, Curtis Bay, Baltimore.

The Simplex Devices, Inc., 125 Law Building, Baltimore, has been incorporated to manufacture steel and iron products. The incorporators are James E. Davis, Joshua S. Linthicum and Ernest Warner.

The Seacoast Packing Co., Beaufort, S. C., will build a 85 x 110-ft. packing plant to cost \$100,000. V. L. Collier is general manager.

A one-story foundry addition, 30 x 50 ft., will be built by the Mountain City Foundry & Machine Co., Greenville, S. C.

Milwaukee

MILWAUKEE, NOV. 22.

New machine tool business continues restricted in volume and diversified, but most shops are able to maintain a fair production schedule on old orders. Inquiry has increased in the last few days, but real interest is still lacking. Manufacturers of heavy machinery and equipment are busy, but shops engaged in the production of light metal parts continue to reduce forces, which is also true of foundries in this section.

The Nordberg Mfg. Co., Milwaukee, is completing additions to its plant at Chicago and Oklahoma avenues, which will cost about \$150,000 and provide capacity for the construction of large Diesel-type engine units. The machine shop has been enlarged 180 x 200 ft.

The Lincoln Light Corporation, Milwaukee, has been organized with an authorized capital stock of \$250,000 to manufacture generating equipment. The incorporators are Adolph, Herbert and James Mahler, 219 Twenty-eighth Street.

The Valley Iron Works, Appleton, Wis., which erected a foundry addition last spring, has completed a new machine and erecting shop, 40 x 135 ft., equipped with a 10-ton crane. In addition to manufacturing beaters for paper and pulp mills, it is now building complete paper manufacturing units.

The Bower City Machine Co., Janesville, Wis., has disposed of its shop building at 211 Milwaukee Avenue to the Samson Tractor Co., and will erect a new shop, 60 x 172 ft., at 957 McKey Boulevard. It is to be ready about March 1 and will cost about \$40,000, including equipment. W. C. St. Clair is president and manager.

The Oshkosh Motor Truck Co., Oshkosh, Wis., is transferring its operation to its new plant on Oregon Street, which has been erected and equipped at a cost of \$172,000. W. A. Besserdich is chief engineer.

The Marshfield Farm Electric Co., Marshfield, Wis., has been chartered with a capital stock of \$20,000 to manufacture

electro-generating units and appurtenances for farms and isolated places. The incorporators are R. F. Finucane, J. P. O'Connell and J. P. Adler.

The Drop Head Projector Co., Fond du Lac, Wis., manufacturer of portable motion picture machines, has increased its authorized capitalization from \$125,000 to \$250,000. It is purchasing additional equipment from time to time and early in the spring contemplates the erection of an addition.

The Fennimore Prairie Electric & Power Co., Fennimore, Wis., has filed articles of incorporation with a capital stock of \$25,000. The incorporators are R. M. Orchard, Anton Eisele and Emil Schwer.

The Meehan Mfg. Co., 216 West Water Street, Milwaukee, has engaged O. Lupinsky, consulting and contracting engineer, 711 Chestnut Street, to make plans for a one-story brick and steel machine shop and erecting floor, 60 x 120 ft., to be built at Jackson, Wis. The investment will be about \$50,000. W. A. Richter is general manager.

The Standard Piston Pin Co., Racine, Wis., has been incorporated, with a capital stock of \$25,000, to manufacture machinery, tools and metal products, specializing in gas engine and other automotive parts. The incorporators are W. F. Hansche, John B. Barr and Joseph G. Barr.

The Board of Education, Merrill, Wis., has engaged Parkinson & Dockendorff, architects, La Crosse, Wis., to design an ell-shaped addition, 60 x 200 ft., three stories and basement, to the Merrill High School, estimated to cost \$225,000. It will be of brick, tile and steel and contain a manual training department. C. W. Hirschner is city superintendent.

The Polonia Phonograph Co., 435 Broadway, Milwaukee, a new \$50,000 corporation, has awarded contracts for a two-story factory, 40 x 160 ft., at Grove and Harrison streets, to manufacture phonographs, motors, parts and talking machine records.

J. H. Berg & Co., Marshfield, Wis., is building a machine and forge shop, 44 x 140 ft., to cost about \$20,000 with equipment.

The Jefferson Rubber Co., Jefferson, Wis., with \$500,000 capital stock, has awarded contracts for a one-story factory, 80 x 320 ft., for manufacturing tires, tubes and mechanical rubber goods. C. R. Girtan is general manager.

The University of Wisconsin, Madison, is in the market for boiler and stoking equipment for the new central heating plant being erected at a cost of about \$200,000. Specifications will be issued shortly. Arthur Peabody is State architect, and H. J. Thorkelson is business manager of the university.

The Central South

St. Louis, Nov. 22.

The Ten Broeck Tire Co., 840 South Twenty-sixth Street, Louisville, manufacturer of automobile tires, is planning for the erection of an addition to its plant at Courtney and South Twenty-sixth streets, to cost about \$750,000, including machinery.

The Ford Motor Co., Detroit, has plans under way for an addition to its plant at Louisville, 100 x 200 ft., estimated to cost about \$500,000, including equipment.

The Kentucky-Virginia Coal Co., Whitesburg, Ky., recently organized, is planning for the erection of a coal tippie at its properties. R. H. Bruce and J. D. Moore head the company.

The Clear Vision Pump Co., 110 East Douglas Avenue, Wichita, Kan., manufacturer of gasoline pumping machinery, will erect a new one-story plant, 50 x 70 ft., on Harry Street, to cost about \$30,000.

The E. C. Meier Lubricating Co., Wichita, Kan., manufacturer of lubricating equipment, is considering the erection of a new plant on North Waco Avenue.

The Metallic Industries, Inc., St. Louis, an interest of the Measuregraph Co., has increased its capital from \$200,000 to \$300,000. The company specializes in the manufacture of metal toys and has arranged for the establishment of a new plant in a building formerly occupied by the Dorris Motor Car Co.

The International Harvester Co., 606 South Michigan Avenue, Chicago, is considering plans for the erection of a new works at Louisville, to cost about \$500,000.

The Louisville Belting Co., 505 West Main Street, Louisville, recently organized, has arranged for the establishment of a temporary plant for the manufacture of new and reclaimed belting. Later, it is said, the company will build permanent works. W. R. La Vielle is president and treasurer.

The Pegrin & Sorg Mfg. Co., Nashville, Tenn., has been incorporated with a capital of \$15,000 by R. C. Pegrin, Eugene Sorg and O. M. Davis, to manufacture agricultural implements.

IRON AND INDUSTRIAL STOCKS

Further Downward Revision Followed by a Smart Recovery, Continued This Week

Following a further revision in quotations for iron and industrial stocks during which United States Steel fell to 80, Bethlehem B to 51, Crucible to 85, Midvale to 30 1/4, Baldwin Locomotive to 91 1/4, American Car & Foundry to 118 1/4, General Electric to 118 1/4, and others proportionately low, there has been a marked recovery based on much lower rates for money than have been named by the banks in many weeks. Then too, the recent statement by Chairman Gary, United States Steel Corporation, regarding steel prices, has eased the tension felt by holders of independent steel shares.

Whether or not the easier money situation is temporary remains to be seen, but certain it is that in financial circles at least, a feeling exists that liquidation of such commodities as grains, cotton, wool and leather, which has been going on for some time, is nearing an end. This feeling is not only reflected in the most recent course of prices for stocks, but in that for Liberty and other bonds as well. It is not felt, however, that the general liquidation movement is over. The recovery in industrial and iron stocks has ranged from one to several points.

The upward movement was accelerated Monday by the announcement of the purchase of a large block, estimated at fully 3,000,000 shares, of General Motors common from William C. Durant, president, by the Dupont interests, who, with J. P. Morgan & Co., are now said to be in control of more than 51 per cent of the stock. From Saturday up to the close of the stock market Monday, according to the New York Tribune averages, the average of 30 representative industrial stocks rose from 72.77 to 76.27, that of 20 rails from 66.65 to 68.65.

The range of prices on active iron and industrial stocks from Saturday of last week to Monday of this week was as follows:

Allis-Chalm. com. 28 - 32	Lake Sup. Corp. 8 - 9 1/4
Allis-Chalm. pf. 69 - 71	Midvale Steel 30 1/4 - 35 1/4
Am. Can. com. 22 1/4 - 26	Nat.-Acme 28 1/4 - 31
Am. Can. pf. 79 - 84 1/4	Nat. E. & S. com. 45 - 49 1/4
Am. C. & F. com. 118 1/4 - 127	N. Y. Air Brake 80 - 83 1/4
Am. C. & F. pf. 107 - 107 1/2	Nova Scotia stl. 35 1/4 - 40 1/4
Am. Loco. com. 80 1/4 - 88	Pittsburgh Stl. pf. 87
Am. Loco. pf. 100 - 100 1/4	Pressed Stl. com. 77 - 90
Am. Stl. F. com. 26 - 32	Pressed Stl. pf. 97
Am. Stl. F. pf. 83 1/4 - 85	Ry. Stl. Spg. com. 81 - 88 1/4
Bald. Loco. com. 91 1/4 - 102 1/2	Ry. Stl. Spg. pf. 104
Bald. Loco. pf. 97 - 98	Replodge Steel 75 1/4 - 81 1/4
Beth. Steel com. 52 1/4 - 60 1/4	Republic com. 63 1/4 - 69 1/4
Beth. Stl. Cl. B. 51 - 61 1/4	Republic pf. 90 - 92 1/4
Beth. Stl. 8% pf. 100 1/2 - 104	Sloss com. 51 - 56 1/4
Case, J. I., pf. 82 1/4	Superior Steel 41 - 44
Colo. Fuel 28 - 30 1/4	Tran.-Williams 40 1/4 - 42
Cruc. Steel com. 85 - 108	Un. Alloy Steel 32 - 32 1/2
Cruc. Steel, pf. 84 - 90	U. S. Pipe pf. 10 1/4 - 11 1/2
Gen. Electric 118 - 123	U. S. Pipe com. 39 1/4 - 41
Gt. No. Ore Cert. 29 1/4 - 31 1/4	U. S. Steel com. 80 - 83 1/4
Gulf States Steel 30 - 40	U. S. Steel pf. 105 1/4 - 106 1/4
Int. Har. com. 88 - 98 1/4	Vanadium Steel 41 1/2 - 51
Int. Har. pf. 100 - 104 1/4	Va. I. C. & Coke 89 - 96
Lackawanna Stl. 46 1/4 - 58	Westingh. Elec. 40 1/4 - 44 1/4

Quarter Earnings of Allis-Chalmers Mfg. Co.

For the quarter ended Sept. 30, the Allis-Chalmers Mfg. Co. reports net profits, after Federal taxes, of \$925,325, equivalent, after preferred dividends, to \$2.49 a share on \$25,770,750 outstanding common, against \$767,214, or \$1.84, for the preceding quarter and \$916,309, or \$2.45 a share, for the corresponding quarter of 1919. Net profits for the nine months ended Sept. 30 amounted to \$2,525,287 or \$6.50 a share, after preferred dividends, compared with \$2,839,278, or \$7.72 a share for the same period of the previous year. Unfilled orders on hand Sept. 30 totaled \$19,814,948, against \$14,542,704 at the same time last year.

American Steel Foundries Report

In common with reports issued by similar corporations for corresponding periods, that of the American Steel Foundries for the nine months ended Sept. 30, last, shows larger earnings on the common shares than was the case in 1919. In this instance, the company's net earnings for that period were \$6,434,743, as compared with \$3,751,696 for the nine months ended Sept. 30, 1919, and a balance, after allowing more than double the amount for depreciation, of \$5,966,146, as against one of \$3,540,870 last year.

The "other income" account shows \$339,150, contrasted with \$330,118 last year, bringing the total income before Federal taxes, etc., up to \$6,305,296, compared with \$5,870,988 in 1919. The Federal taxes this year for the nine month period were \$1,638,500, against \$1,243,113 last year, leaving, after other charges, a surplus of \$4,276,889, which is equal after preferred dividends, to \$7 a share earned on the company's \$18,215,100 common stock. For the corresponding period last year, there was a surplus of \$2,462,573, which showed after provisions for the preferred dividend, \$3.91 earned on \$17,184,000 common stock.

NEW TRADE PUBLICATIONS

Periodograph Time Record System.—Gisholt Machine Co., Madison, Wis. Folder with the title "A Trip Through A Periodograph Regulated Factory." Shows the various steps in a time record system for scheduling and recording the starting and finishing time of an order, each progressive step being illustrated and explained.

Thawing Outfits and Torches.—Aeroli Burner Co., 400 Main Street, Union Hill, N. J. Bulletin 10. Illustrations with descriptions of thawing outfits and torches for removing ice and snow from frozen coal and ore cars, hoppers, pockets, conveyors, loading chutes, dippers, tracks, and switches.

Foundries.—Frank D. Chase, Inc., 645 North Michigan Avenue, Chicago. Booklet with the title "Foundries That Fit." Illustrations of representative plants designed by this company.

White Metal Alloys, Bronze and Brass Ingots, Bearings and Castings.—Ajax Metal Co., Frankford Avenue and Richmond Street, Philadelphia. Catalog, 38 pages, 7½ x 10 in., published in two editions, one in English, the other in Spanish. Devoted to a complete listing of the company's products, including white metal alloys, bronze and brass ingots, bearings and castings, together with a detailed account of their uses in the various industries.

Foundry Equipment.—Whiting Corporation, Harvey, Ill. Catalog and booklet. Catalog 154, 49 pages, 8½ x 11 in., illustrates and describes complete equipment for gray iron, steel, brass, car wheel and malleable iron foundries. The Whiting Corporation is a consolidation of the Whiting Foundry Equipment Co., Harvey, Ill., and the American Foundry Equipment Co., New York. Eastern sales office of the company is at 366 Madison Avenue, New York. Other booklets deal with the No. 61 hand operated molding machine; foundry flasks; sand tempering in malleable foundries; and the fourth booklet reproduces letters from users of the company's sand cutting machines.

Fans, Ventilators, Dust Collectors, etc.—Hersh Brothers Co., Allentown, Pa. Catalog, 63 pages, 8½ x 11 in. Illustrates and describes an extensive line of fans, blowers, air washers, roof fan ventilators and dust collectors.

Bending Brakes.—Dreis & Krump Mfg. Co., 2909 South Halsted Street, Chicago. Two circulars. No. 19H describes a hand bending brake, and No. 19P, two power bending brakes. The brakes are made in different sizes to handle steel plates of various gages and lengths. The company's brake for bending steel plates up to 12 ft. long and ¾ in. thick was described in THE IRON AGE, issue of November 4, page 1188.

Bucket Loader.—National Engineering Co., 549 West Washington Boulevard, Chicago. Circular No. 60. Illustrations with descriptions of bucket loaders for Simpson sand mixers and other machines where mechanical loading is desirable.

Lathes, Planers, etc.—Simmons Machine Co., 985 Broadway, Albany, N. Y. Folder. Illustrations and specifications of milling machines, engine lathes, turret lathes, profilers, etc., of various makes which this company is prepared to furnish.

Electric Controlling Devices for the Mine.—Cutler-Hammer Mfg. Co., Milwaukee. Publication 836, 48 pages, 8½ x 11 in., with the title "For the Mine." Concerned with motor controllers, battery charging equipment, electric brakes, iron-clad solenoids, magnetic separators, magnetic clutches, electric space heaters and electric soldering irons. Numerous installation views are shown.

Routing Machine.—H. M. Albee & Son, 201 Sussex Avenue, Newark, N. J. Pamphlet. Illustrates and describes the "Panto" routing machine designed for carving, engraving, inlaying and designing, and for work on steel, zinc, copper, glass, celluloid or similar material.

Electrodes for Electric Furnaces.—Acheson Graphite Co., Niagara Falls, N. Y. Booklet, 48 pages, 6 x 9 in. Photographs of some furnaces using Acheson electrodes and operating in the United States, chosen as typical of the class each represents and the kind of work it is doing.

Power Plants.—Dwight P. Robinson & Co., 125 East Forty-sixth Street, New York. Views of power plants designed and constructed by this company.

Metering Transformers.—Packard Electric Co., Warren, Ohio. Bulletin 208. Describes weatherproof and switchboard types of single, two and three-phase metering transformers.

Welding and Cutting Torches.—Torchweld Equipment Co., Chicago. Catalog. Devoted to welding and cut-

ting apparatus including torches portable welding outfits, portable cutting outfits, materials and accessories.

Pneumatic Tools.—Independent Pneumatic Tool Co., 600 West Jackson Boulevard, Chicago. Circular No. 34. Illustrates the company's line of piston air drills, pneumatic motor hoists, pneumatic hammers and rammers, and moisture separator.

Machinery Enamel.—Hilo Varnish Corporation, Marcy and Flushing avenues, Brooklyn, N. Y. Folder with title "Profiting From Light Surfaces." Sets forth the advantages of "lite-gray" machinery enamel. Photographs show the brightening effect of this enamel when applied on machine tools.

Motor Control Apparatus.—Cutler-Hammer Mfg. Co., Milwaukee. Publication 860. Illustrates and describes motor control apparatus for pumps, compressors and similar service.

Grinding Machinery.—Wilmarth & Morman Co., Grand Rapids, Mich. Catalog. Illustrates and describes grinding machinery including surface grinders, universal grinders and Yankee drill grinders.

Mechanically Operated Cutting Torches.—Davis-Bournonville Co., Jersey City, N. J. Devoted to the Oxy-graph No. 1-A and No. 2, mechanically operated cutting torches for cutting steel with oxy-acetylene or oxy-hydrogen, to drawing, pattern or templet. Illustrations show parts cut with the machines.

Valves.—Homestead Valve Mfg. Co., Homestead, Pa. Folder with the title "Always Faithful." Illustrates and sets forth the advantages of quarter-turn valves for use on air, water, steam, gas, oil, acid, alkali lines, etc.

Welding and Cutting Apparatus.—Eastlan-Blessing Co., West Austin Avenue, Chicago. Catalog No. 20, 36 pages, 7½ x 10½ in. Illustrates and describes an extensive line of welding and cutting apparatus. The principle of operation as well as construction features are described in detail.

Shipbuilders', Contractors', Factory and Railway Supplies.—Hansen & Yorke Co., 88 Warren Street, New York. Catalog 20, 420 pages, 6 x 9 in., with cloth cover. Lists and illustrates an extensive line of shipbuilders', contractors', factory and railway supplies. Useful tables of weights, measures, etc., are included.

Clam Shell Buckets.—G. H. Williams Co., Erie, Pa. Catalog, 60 pages, 8½ x 11 in. Illustrations and descriptions of clam shell buckets of various kinds for excavating and rehandling purposes. Numerous views of the buckets in operation are shown. A description of the company's revolving derrick for coal, sand, iron ore storage and loading plants is included.

Steel Tanks.—Pittsburgh Des Moines Steel Co., Pittsburgh, Pa. Booklet. Deals with steel tanks for automatic sprinkler and industrial service. The book is intended for the manufacturer, architect and engineer, and outlines the adaptability of the company's product in the various fields, describing the points to be considered before definite specifications for the type of installation, capacities or dimensions should be decided upon. Illustrations show a variety of structures erected for various industries.

Bolts, Nuts, Screws, Chain, etc.—Pawtucket Mfg. Co., 27 Pine Street, Pawtucket, R. I. Catalog 11. Lists and illustrations of the company's products as follows: Bolts, nuts, screws, washers, riveted chain, chain links, lap rods, stirrups and levers. Useful tables pertinent to these products are included.

Cylindrical, Form, and Plane Surface Grinding.—Norton Co., Worcester, Mass. Booklet, 46 pages, 5 x 7 in., bound with cloth cover. Discusses steady rests for cylindrical grinding, form grinding with wide face wheel, and grinding of plane surfaces. The booklet is illustrated.

Radial Loaders.—Jeffrey Mfg. Co., Columbus, Ohio. Folder. Illustrates and describes a radial loader for handling loose material, such as crushed stone, coal, coke, cinders, etc.

Pneumatic Safety Valves.—Pneumatic Safety Valve Co., Woonsocket, R. I. Booklet. Describes pneumatic safety valves for pneumatic tools. The valve is attached directly to the air tool in place of the customary air control handle. Air hose is then attached to a specially constructed handle which is furnished with each valve, and the machine is then operated in the usual way.

Bolt and Pipe Threading Machinery.—Landis Machine Co., Waynesboro, Pa. Catalog printed in Spanish, devoted to the company's line of bolt and pipe threading machinery.

Gunitite Slabs.—Cement Gun Co., Cornwells, Bucks County, Pa. Gives the results of tests made on Gunitite slabs together with working tables and safe load tables, established through these tests.

Current Metal Prices

On Small Lots, from Merchants' Stocks, New York City

The quotations given below are for small lots, as sold from stores in New York City by merchants carrying stocks.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipment in carload lots from mills, these prices are given for their convenience.

Iron and Soft Steel Bars and Shapes

Bars:	Per Lb.
Refined iron, base price.....	5.00c.
Swedish bars, base price	20.00c.

Soft Steel:

$\frac{3}{4}$ to 1 $\frac{1}{2}$ in., round and square.....	3.48c. to 4.15c.
1 to 6 in. x $\frac{3}{8}$ to 1 in.....	3.48c. to 4.15c.
1 to 6 in. x $\frac{1}{4}$ to 5/16 in.....	3.58c. to 4.15c.
Rods— $\frac{3}{8}$ and 11/16 in.....	3.53c. to 4.45c.
Bands—1 $\frac{1}{2}$ to 6 by 3/16 to No. 8.....	4.18c. to 5.50c.
Hoops	5.68c. to 6.00c.

Shapes:

Beams and channels—3 to 15 in.....	3.58c. to 4.15c.
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Angles:

3 in. x $\frac{1}{4}$ in. and larger.....	3.58c. to 4.15c.
3 in. x 3/16 in. and $\frac{1}{2}$ in.....	3.83c. to 4.50c.
1 $\frac{1}{2}$ to 2 $\frac{1}{2}$ in. x $\frac{1}{8}$ in.....	3.63c. to 4.30c.
1 $\frac{1}{2}$ to 2 $\frac{1}{4}$ in. x 3/16 in. and thicker.....	3.58c. to 4.25c.
1 to 1 $\frac{1}{4}$ in. x 3/16 in.....	3.63c. to 4.30c.
1 to 1 $\frac{1}{4}$ in. x $\frac{1}{8}$ in.....	3.68c. to 4.35c.
$\frac{7}{8}$ x $\frac{7}{8}$ x $\frac{1}{8}$ in.....	3.73c. to 4.40c.
$\frac{3}{4}$ x $\frac{1}{2}$ in.....	3.78c. to 4.45c.
$\frac{5}{8}$ x $\frac{1}{2}$ in.....	4.18c. to 4.85c.
$\frac{1}{2}$ x 3/32 in.....	5.28c. to 5.95c.

Tees:

1 x $\frac{1}{8}$ in.....	3.98c. to 4.65c.
1 $\frac{1}{4}$ in. x 1 $\frac{1}{4}$ x 3/16 in.....	3.88c. to 4.55c.
1 $\frac{1}{2}$ to 2 $\frac{1}{2}$ x 3/16 in. and thicker.....	3.68c. to 4.35c.
3 in and larger.....	3.63c. to 4.30c.

Merchant Steel

Tire, 1 $\frac{1}{2}$ x $\frac{1}{2}$ in. and larger.....	Per Lb.
(Smooth finish, 1 to 2 $\frac{1}{2}$ x $\frac{1}{4}$ in. and larger).....	4.15c. to 4.65c.
Toe calk, $\frac{1}{2}$ x $\frac{1}{8}$ in. and larger.....	6.00c.
Cold-rolled strip (soft and quarter hard).....	12c. to 14c.
Open-hearth spring steel.....	7.00c. to 10.00c.
Shafting and Screw Stock:	
Rounds	6.25c. to 7.00c.
Squares, flats and hex.....	6.75c. to 7.50c.
Standard cast steel, base price.....	15.00c.
Best cast steel	20.00c. to 24.00c.
Extra best cast steel.....	25.00c. to 30.00c.

Tank Plates—Steel

$\frac{1}{4}$ in. and heavier.....	3.78c. to 4.15c.
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Sheets

Blue Annealed

No.	Per Lb.
No. 10	4.68c. to 7.25c.
No. 12	4.73c. to 7.30c.
No. 14	6.25c. to 7.35c.
No. 16.....	6.35c. to 7.45c.

Box Annealed—Black

Nos.	Soft Steel C.R., One Pass Per Lb.	Wood's Refined, Per Lb.
Nos. 18 to 20.....	7.90c. to 8.80c.	.....
Nos. 22 and 24.....	7.95c. to 8.85c.	10.80c.
No. 26	8.00c. to 8.90c.	10.85c.
No. 28	8.10c. to 9.00c.	11.00c.
No. 30	8.20c. to 9.25c.	.....
No. 28, 36 in. wide, 10c. higher.....		

Galvanized

No.	Per Lb.
No. 14	8.60c. to 9.60c.
No. 16	8.85c. to 9.75c.
Nos. 18 and 20.....	9.00c. to 9.90c.
Nos. 22 and 24.....	9.15c. to 10.05c.
No. 26	9.30c. to 10.20c.
No. 27	9.45c. to 10.35c.
No. 28	9.60c. to 10.50c.
No. 30	10.10c. to 11.00c.
No. 28, 36 in. wide, 20c. higher.....	

Standard Steel

	Blk.	Galv.		Blk.	Galv.
$\frac{1}{2}$ in. Butt... ..	—34	—17	$\frac{3}{4}$ -1 $\frac{1}{2}$ in. Butt. —	3	+17
$\frac{3}{4}$ -3 in. Butt. —	38	—22	2 in. Lap.....	+	3
3 $\frac{1}{2}$ -6 in. Lap. —	33	—18	2 $\frac{1}{2}$ -6 in. Lap....	+	1
7-12 in. Lap.. —	23	—6	7-12 in. Lap....	+	12

Wrought Iron

On a number of articles the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE under the general heading of "Iron and Steel Markets" and "Metal Markets."

Steel Wire

BASE PRICE* ON NO. 9 GAGE AND COARSER	Per Lb.
Bright basic	8.00c.
Annealed soft	8.00c.
Galvanized annealed	8.75c.
Coppered basic	8.50c.
Tinned soft Bessemer	10.00c.

*Regular extras for lighter gages.

Brass Sheet, Rod, Tube and Wire

BASE PRICE	
High brass sheet	25 $\frac{1}{4}$ c. to 26c.
High brass wire	26 $\frac{1}{4}$ c. to 27c.
Brass rod	23 $\frac{1}{4}$ c. to 25c.
Brass tube	41 $\frac{1}{2}$ c. to 43c.

Copper Sheets

Sheet copper, hot rolled, 24 oz., 26 $\frac{1}{2}$ c. to 27 $\frac{1}{2}$ c. per lb. base.	
Cold rolled, 14 oz. and heavier, 2c. per lb. advance over hot rolled.	

Tin Plates

Bright Tin	Grade "AAA" 14x20	Grade "A" 14x20	Coke—14x20	Primes	Wasters
IC...\$16.50	\$14.25		80 lb....	\$10.80	\$10.55
IX... 18.75	16.25		90 lb....	10.90	10.65
IXX... 20.50	18.00		100 lb....	11.00	10.75
IXXX... 22.25	19.75		IC...	11.25	11.00
IXXXX... 23.75	21.50		IX...	12.25	12.00
			IXX...	13.25	13.00
			IXXX...	14.25	14.00
			IXXXX...	15.25	15.00

Terne Plates

8-lb. Coating 14 x 20	
100 lb.	\$9.35
IC	9.50
IX	10.50
Fire door stock.....	12.75

Tin

Straits pig	40c.
Bar	45c. to 50c.

Copper

Lake ingot	16 $\frac{1}{2}$ c.
Electrolytic	16 $\frac{1}{2}$ c.
Casting	16 $\frac{1}{2}$ c.

Spelter and Sheet Zinc

Western spelter	8 $\frac{3}{4}$ c. to 9c.
Sheet zinc, No. 9 base, casks.....	14c. open 14 $\frac{1}{2}$ c.

Lead and Solder*

American pig lead	8c. to 8 $\frac{1}{2}$ c.
Bar lead	9c. to 10c.
Solder, $\frac{1}{2}$ and $\frac{1}{2}$ guaranteed.....	30c.
No. 1 solder	27 $\frac{1}{2}$ c.
Refined solder	23 $\frac{1}{2}$ c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb.....	90c.
Commercial grade, per lb.....	50c.

Antimony

Asiatic	7 $\frac{1}{2}$ c. to 8 $\frac{1}{2}$ c.
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Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb....	35c. to 38c.
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Old Metals

The week has been very quiet with values slowly declining. Dealers' buying prices are as follows:

	Cents Per Lb.
Copper, heavy and crucible.....	12.00
Copper, heavy and wire.....	11.00
Copper, light and bottoms.....	9.50
Brass, heavy	7.00
Brass, light	5.25
Heavy machine composition	11.75
No. 1 yellow brass turnings	6.50
No. 1 red brass or composition turnings.....	5.00
Lead, heavy	3.50
Lead, tea	3.50
Zinc	4.00

